

ENVIRONMENTAL ASSESSMENT for the Pathfinder Pipeline Project Natrona and Carbon Counties, Wyoming



May 2007

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Rawlins Field Office
P.O. Box 2407 (1300 North Third Street)
Rawlins, Wyoming 82301-2407



May 9, 2007

In Reply Refer To:
WYW-166592
1790 (030)

Re: Environmental Assessment for the
Pathfinder Pipeline Project

Dear Reader:

Enclosed for your review and comment is the Pathfinder Pipeline Project Environmental Assessment (EA).

In order to satisfy the requirements of the National Environmental Policy Act, this EA was prepared to analyze impacts associated with the construction, maintenance, and reclamation of the 16-inch buried, crude oil pipeline from Casper to Sinclair, Wyoming.

It is expected that this EA can be viewed at our website beginning May 9, 2007. This will begin the 30-day public review/comment period for the document. We will review all comments and will address substantive comments in the Decision Record. A substantive comment is one that would alter conclusions drawn from the analysis based on: 1) new information, 2) why or how the analysis is flawed, 3) evidence of flawed assumptions, 4) evidence of error in data presented, and 5) requests for clarification that bear on conclusions presented in the analysis.

Your comments should be as specific as possible. Comments on the alternatives presented and on the adequacy of the impact analysis will be accepted by the BLM until June 11, 2007. Comments may be submitted via regular mail to:

Chuck Valentine, Project Manager
Bureau of Land Management
Rawlins Field Office
P.O. Box 2407
Rawlins, Wyoming 82301

or may be submitted electronically at the address shown below (please refer to the Pathfinder Pipeline Project):

e-mail: rawlins_wymail@blm.gov


Please note that comments, including names, e-mail addresses, and street addresses of respondents, will be available for public review and disclosure at the above address during regular business hours (7:45 a.m. to 4:30 p.m.) Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your name, e-mail address, or street address from public review or from disclosure under the Freedom of Information Act, you must state this plainly at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety. The EA may also be reviewed at either of the following locations:

Bureau of Land Management
Wyoming State Office
5353 Yellowstone Road
Cheyenne, Wyoming 82009

Bureau of Land Management
Rawlins Field Office
1300 N. Third Street
Rawlins, Wyoming 82301

If you require additional information regarding this project, please contact Chuck Valentine, Project Manager, at the Rawlins address or phone (307) 328-4307.

Sincerely,

ACTING 
Field Manager

Enclosure

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ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
AOI	Area of Influence
AUMs	Animal Unit Months
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFO	Casper Field Office
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DOT	Department of Transportation
EA	Environmental Assessment
ESA	Endangered Species Act
FWPCA	Federal Water Pollution Control Act
LFO	Lander Field Office
I-80	Interstate 80
IDT	Interdisciplinary Team
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO ₂	Nitrogen Dioxide
NOAA	National Oceanic & Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O ₃	Ozone
OHWM	Ordinary High Water Mark
Pb	Lead
PFC	Proper Function Condition
PM _{2.5}	2.5 Microns in Diameter
PM ₁₀	10 Microns in Diameter
POD	Plan of Development
PPPA	Pathfinder Pipeline project area
PSD	Prevention of Significant Deterioration
RFO	Rawlins Field Office
RMP	Resource Management Plan
ROW	Right-of-Way
SHPO	State Historic Preservation Office
Sinclair	Sinclair Pipeline Company
SO ₂	Sulfur Dioxide
SPCC	Spill Prevention, Control, and Countermeasure Plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRM	Visual Resource Management

WAAQS	Wyoming Ambient Air Quality Standards
WDAI	Wyoming Department of Administration and Information
WDOE	Wyoming Department of Employment
WGFD	Wyoming Game and Fish Department
WOS	Wildlife Observation System
WDEQ	Wyoming Department of Environmental Quality
WGFD	Wyoming Department of Game and Fish
WOS	Wildlife Observation System
WQD	Water Quality Division
WSGS	Wyoming State Geological Survey
WY	Wyoming
WY-GAP	Wyoming Gap Analysis Project
WY SEO	Wyoming State Engineer's Office
WYNDD	Wyoming Natural Diversity Database

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

Sinclair Pipeline Company (Sinclair) has submitted a Plan of Development (POD) to the Bureau of Land Management (BLM) to amend an existing pipeline easement across federal lands. They propose to amend their pipeline right-of-way (ROW) easement from the Sinclair Refinery at Sinclair, Wyoming (WY) to Casper, WY to allow for the construction, operation, and maintenance of a new 16-inch diameter pipeline. The current easement is occupied by one 8-inch and 10-inch pipeline. The new 16-inch pipeline will be designed to transport more than 90,000 barrels of crude oil per day from Casper to Sinclair. This new pipeline will occupy the same easement as the existing pipelines. Sinclair has named this project the Pathfinder Pipeline.

The proposed new 103 mile pipeline crosses Carbon and Natrona Counties in WY. Land ownership along the ROW is a checkerboard of federal, state, and private land. The federal sections are primarily administered by the BLM Rawlins Field Office (RFO), Casper Field Office (CFO), and Lander Field Office (LFO). However, part of the pipeline ROW crosses the Pathfinder National Wildlife Refuge administered by the U.S. Fish and Wildlife Service (USFWS).

The Pathfinder Pipeline project area (PPPA) is defined as a 50 foot permanent ROW, with an additional 25 feet added for construction, bringing the total construction pipeline ROW to 75 feet, and includes four additional construction staging areas that will expand the construction footprint beyond 75 feet in some locations. The location of the PPPA is shown in **Figure 1-1**.

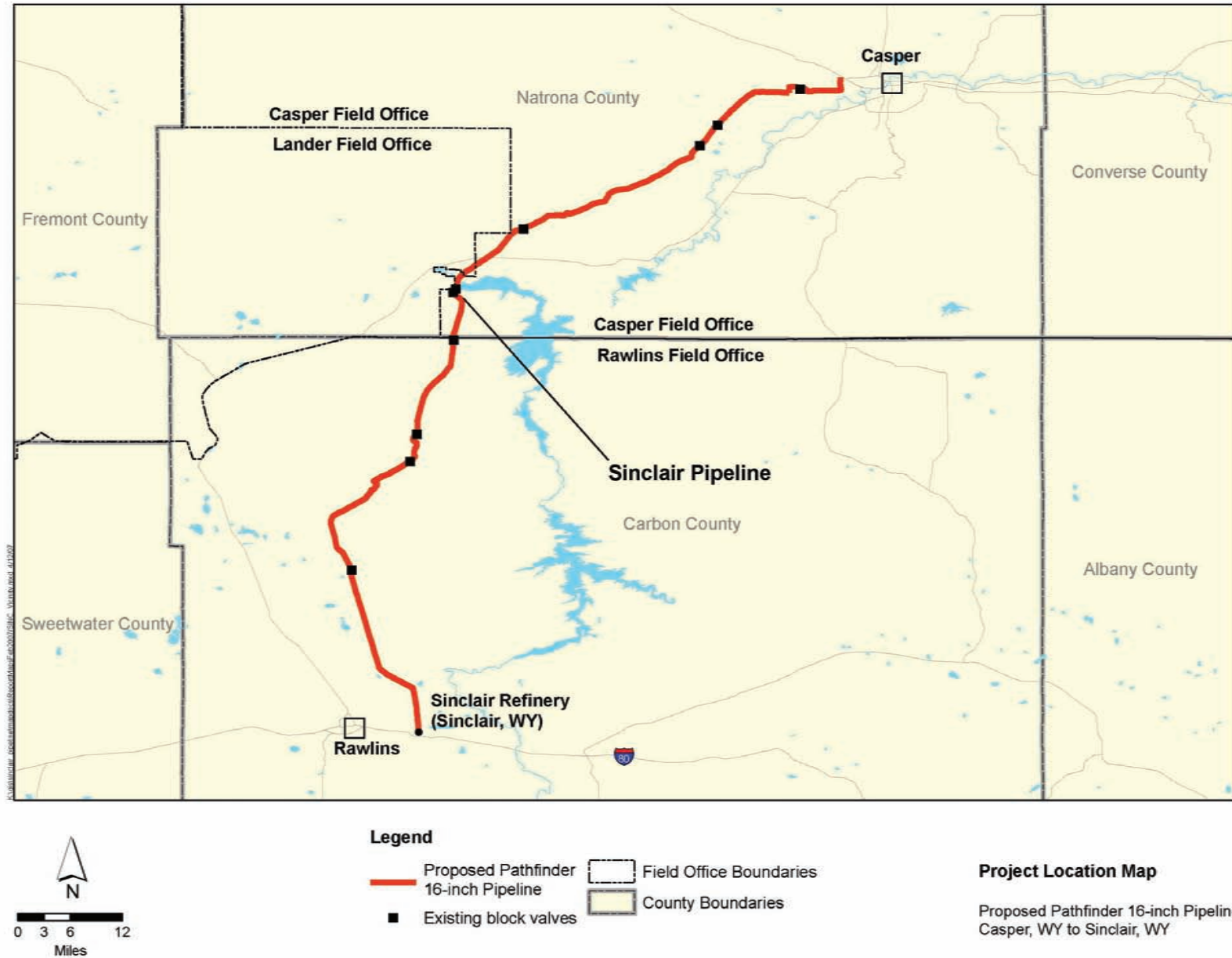
1.2 PURPOSE AND NEED FOR ACTION

1.2.1 Purpose and Need for the Proposed Project

The purpose of the Proposed Action is construction of a new 16-inch pipeline to provide the Sinclair Refinery with heavier, more viscous crude oil. Currently, the supply of light, low viscosity crude is diminishing and is being replaced with the heavier crude. As a result of the higher viscosities, larger diameter pipelines are required to transport the crude to refineries. This change in the type of crude available to refineries is also being combined with a proposed expansion of the Sinclair Refinery. It has been determined that the existing 8-inch and 10-inch pipelines currently being used to supply crude to the Sinclair Refinery will not have sufficient capacity to supply the volume and types of crude necessary to accommodate the refinery expansion.

Expansion of the Sinclair Refinery is proposed based on the increasing demand for gasoline and diesel in Wyoming, Colorado, Idaho, and Utah. In addition, the Sinclair Refinery is also a major supplier of commercial and military jet fuel in the Rocky Mountain Region. It is estimated by the Department of Energy that gasoline and diesel consumption will increase at an annual rate of 1.5 percent through 2015. Because of the limited number of refineries in the region, the Sinclair facility will play an important role in supplying this demand.

Figure 1-1
Location of Pathfinder Pipeline Project Area



The new 16-inch pipeline will be constructed of newer pipeline material and additional safety measures will be followed to improve the integrity of the pipeline.

1.2.2 Environmental Analysis Process

The BLM is required to prepare this environmental assessment (EA) to analyze and determine whether any significant impacts may occur in connection with the Proposed Action as stipulated in the National Environmental Policy Act (NEPA). This EA documents the analysis conducted on the proposal and alternatives in order to identify environmental effects and mitigation measures. In addition, this document is used for public review and comment on the Proposed Action, the environmental analysis, and mitigation measures.

Factors considered during the environmental analysis for this Proposed Action include the following:

- A determination of whether the proposal and alternatives conform to BLM policies, regulations, and the direction of the Rawlins Resource Management Plan (RMP) Casper RMP, and Lander RMP.
- A NEPA analysis was not conducted during installation of the 8-inch and 10-inch pipelines. These pipelines were installed before the regulations that stipulate NEPA were adopted.
- A determination of whether the proposal and alternatives conform to the policies and regulations of other agencies that are likely to be associated with the project. The USFWS administers the Pathfinder National Wildlife Refuge, and requires biological surveys for federally listed plant and wildlife species on their lands.
- A determination of impacts on the human environment that will result from the Proposed Action, and development of mitigation measures necessary to avoid or minimize potential impacts.

1.3 RELATIONSHIP TO POLICIES, PLANS, AND PROGRAMS

This EA is prepared in accordance with NEPA and complies with all applicable regulations and laws passed subsequent to the Act. In addition, the EA is prepared using the stipulations and format outlined in the BLM NEPA Handbook (H-1790-1).

1.3.1 Conformance with Rawlins RMP, Casper RMP, and Lander RMP

Using the existing utility ROW for delivery of petroleum products is covered by the Rawlins RMP, Casper RMP, and Lander RMP. The Rawlins RMP identifies the existing ROW as the likely location for placement and development of new petroleum delivery pipelines. Therefore, development of the Proposed Action is in conformance with the management directives identified for utility ROW development in the RMP.

1.3.2 Relationship to Statutes, Regulations, and Other Plans

Pipeline ROW grants are issued by the BLM under the authority of the Mineral Leasing Act of 1920. The ROW application and POD are subject to standard approval procedures outlined in ROW grant regulations (43 Code of Federal Regulations [CFR] 2800). The POD explains the Proposed Action, outlines the environmental analysis required to ensure all environmental effects are documented as they relate to the project, and includes mitigation measures to ensure protection of resources and land uses.

Activities associated with the Proposed Action will adhere to all local, state, and federal agency plans and regulations. All impacts to waterways, as a result of the Proposed Action, will be verified and the U.S. Army Corps of Engineers (USACE) will be notified for any impacts to these waterways. A stormwater construction management permit and plan will be prepared and submitted to the Wyoming Department of Environmental Quality (WDEQ). The discharge of hydrostatic test water will require a National Pollutant Discharge Elimination System (NPDES) general permit for temporary discharge from the WDEQ/Water Quality Division (WQD).

1.3.3 Issues and Concerns

The following environmental, social, and management issues associated with the Proposed Action have been identified:

Soil Resources

1. Sensitive sand dunes in the vicinity of the Ferris Mountains will be impacted during construction.
2. Soils with high erosion potential (both wind and water) and soils that are moderately to strongly alkaline are also found along the pipeline ROW and will be impacted during construction.

Cultural Resources

1. Impacts to the Oregon Trail are a concern along the northern portion of the PPPA.
2. Four prehistoric sites identified in the ROW will require specific mitigation.

Vegetation

1. Revegetation of disturbed soils is a concern based on the continued drought conditions in central WY.

Sensitive Plants

1. Surveys determined the presence of the many-stemmed spider-flower within the Steamboat Lakes area located within the Pathfinder National Wildlife Refuge.

Wildlife

1. Greater sage-grouse leks may be affected by surface disturbance, vehicle traffic, and human presence.
2. Mountain plover habitat may be affected by surface disturbance and human activities.

3. Nesting raptors could be affected by construction activities.
4. Mule deer and antelope crucial winter range occur in the PPPA.

Sensitive Wildlife

1. Leopard frog population present in PPPA.
2. Burrowing owls located in PPPA.
3. Long-billed curlew located along ROW.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 ALTERNATIVE DEVELOPMENT PROCESS

In accordance with 40 CFR 1502.14(a), the BLM is required to define issues and evaluate all reasonable alternatives. This EA evaluates two alternatives, Alternative 1 (Proposed Action) and the No Action. Alternative 1 meets the objective of the purpose and need, while minimizing or avoiding adverse environmental impacts to the greatest extent possible. The location of the proposed pipeline within an existing ROW was determined during the environmental analysis process to avoid and minimize impacts to resources. Additionally, only one action alternative was analyzed because the Sinclair pipeline ROW had been previously disturbed during installation of other pipelines and ongoing maintenance activities.

2.1.1 Alternative 1 – Proposed Action

The proposed project submitted by Sinclair consists of the installation, operation, and maintenance of a new 16-inch product pipeline to be located within an existing 50 foot ROW permitted by the BLM. Two pipelines, an 8-inch and 10-inch, are currently located in the ROW.

The PPPA is approximately 103 miles in length and will run from Casper, WY to Sinclair, WY. The entire project is located in Natrona and Carbon Counties. Land ownership of the ROW is a mix of federal, state, and private land. Federal land within the 50 foot permanent ROW comprises 238 acres, private land 283 acres, and state land 102 acres. The overall estimated temporary disturbance on federal land will be 343 acres of BLM administered lands and 27 acres of USFWS property within the Pathfinder National Wildlife Refuge. Temporary disturbance includes the 75 foot construction pipeline ROW and additional space required for construction activities. Additional construction activities and temporary disturbances include: directional bore sites for waterway crossings and storage space for pipeline and equipment.

Ancillary facilities associated with the PPPA include installation of above ground block valves. These block valves will be located at the same locations as the existing valves. Additionally, line markers will be installed as required by 49 CFR Part 195. No other above ground structures will be required for the pipeline.

Access to the pipeline ROW will be provided by existing roads and two-tracks suitable for trucks and construction equipment. These roads will be used for construction staging and transportation, and will continue to be used after construction for access to the pipeline for maintenance purposes. The pipeline can be accessed from Casper on Highway 220 at several locations. From Sinclair, the pipeline can be accessed from Carbon County Road 351.

Installation of the pipeline will result in temporary disturbance that will occur only during the construction phase of the project. After installation of the pipeline, the ROW will be reclaimed to the original contour and revegetated with an approved BLM native seed

mixture. **Table 2-1** identifies the estimated disturbance that will occur on federal, state, and private lands.

Construction of the pipeline is expected to last from three to four months. The scheduled start of construction will be after wildlife stipulations end, typically in late July or early August, and finish in late October. However, some sections of the ROW not under wildlife stipulations or areas granted a wildlife stipulation exemption could be allowed an earlier start in construction. An earlier construction date will need to be requested in writing to the BLM through the exemption process, and will require presence/absence surveys where protected wildlife resources occur. Exceptions may be granted by the BLM if they determine the activity has no impact on the species.

2.1.2 No Action Alternative

The No Action Alternative is required under 40 CFR 1502.14(d), and applicable BLM regulations implementing these requirements. This alternative is required to be analyzed in all EAs, thus allowing decision makers to compare the magnitude of environmental effects of all action alternatives versus not installing the new pipeline.

Under the No Action Alternative, Sinclair will not install the new 16-inch petroleum pipeline within the existing ROW. This alternative would result in no new disturbance within the existing pipeline ROW. However, standard operation and maintenance activities would continue along the pipeline ROW.

2.1.3 Alternatives Considered During Analysis

Several minor reroutes of the original pipeline ROW were adopted because of landowner issues and avoidance of environmental resources. The reroutes varied in length, with most being between one to seven miles. Reroutes occurred on private property and were proposed by landowners who requested the ROW across their property be moved so pipeline maintenance will not interfere with agricultural activities. Additional reroutes were designed to avoid impacts to the Oregon Trail. These reroutes were developed through collaboration between the BLM, Wyoming State Historic Preservation Office (SHPO), and Sinclair.

2.2 SUMMARY OF DISTURBANCE ESTIMATES

Sinclair is proposing a 75 foot wide temporary ROW during construction. Construction related activities for the 103 mile pipeline ROW will result in the temporary disturbance of approximately 1,012 acres. Included in this total will be designated temporary work spaces and directional bore sites resulting in the disturbance of approximately 77 acres. The installation of additional block valves will occur where the existing valves are located. This will result in .012 acres of permanent disturbance. Surface disturbances associated with the Proposed Action are summarized in **Table 2-1**.

Table 2-1: Temporary and Long-Term Surface Disturbance – Sinclair to Casper 16-Inch Pipeline Project

Facility	BLM Lands	Pathfinder National Wildlife Refuge (USFWS)	State Lands	Private Lands	Total Acres
Pipeline - 50 Foot Permanent ROW	222 Acres	16 Acres	102 Acres	283 Acres	623 Acres
Pipeline - Total Temporary Construction ROW Disturbance Outside Permanent ROW (Additional 25 Feet)	111 Acres	8 Acres	51 Acres	142 Acres	312 Acres
Temporary Work Areas - Laydown Areas / Directional Bore Sites	10 Acres	3 Acres	18 Acres	46 Acres	77 Acres
Block Valves (Long-Term Surface Disturbance)	.002 Acres	.002 Acres	.001 Acres	.007 Acres	.012 Acres or 522.7 Square Feet

2.3 CONSTRUCTION OPERATIONS

The engineering, design, maintenance, and inspection of the proposed pipeline will be performed by Sinclair personnel and their contractors. Design and construction of the pipeline will be in accordance with the Department of Transportation (DOT) 49 CFR Part 195 “Transportation of Hazardous Liquids by Pipeline.”

The proposed pipeline will be 16-inches in diameter and have a wall thickness of .375 to .500 inches. Pipe materials will meet the requirements of the American Petroleum Institute 5L PSL-2, specifications for line pipe. An impressed current cathodic protection system will be installed to protect the pipeline from corrosion.

Complete removal of vegetation and debris will occur within the entire 75 foot ROW. After the ROW is cleared, a trench 3 to 5 feet wide and 3 to 6 feet deep will be excavated with a trencher or backhoe. The top 4- to 6-inches of topsoil will be wind-rowed separately from other soils so it can be reused after installation of the pipeline. The pipeline will be buried at a minimum of 6 to 15 feet at all railroad, major roads, and waterway crossings. Pipeline will be installed at all perennial waterways by directionally boring under the streambed. This technique is used to insert the pipeline at a depth under the waterway that protects pipeline integrity and prevents environmental damage to the waterway. In general, the boring and receiving pits for the drill will be placed no closer than 80 feet from the ordinary high-water mark of the stream. At these locations, the pipeline will be installed 10 to 15 feet below the channel of the stream or river.

Pipe and other construction materials will be hauled to the PPPA by semi-trucks and placed along the ROW or at a staging area. A bending machine will be used to bend the pipe for proper fit in the trench. During construction, contractors will align sections of the pipe and weld them together, perform nondestructive testing, and protect the welds with shrink sleeves. Upon completion of welding and testing the pipeline, the pipeline will be placed in the trench. The ditch will then be backfilled using an angle dozer or auger. This backfill material will be compacted to prevent subsidence. Lastly, the 4-to 6-inches of topsoil separated during initial excavation will be evenly replaced across the disturbed area. Any additional excavated material that could not be replaced in the ditch will be disposed of in conformance with landowner or agency requirements. After construction and prior to topsoil replacement, Sinclair will leave no berms, windrows, or mounds on the surface except those authorized by the BLM for erosion control purposes.

Additional Work Space

During construction operations, Sinclair will require four additional work spaces that are outside the 75 foot construction ROW. These additional work spaces will be used for staging of construction equipment and materials, and for setting up equipment to directionally bore waterways.

All of the pipeline storage sites will be located on sites currently occupied by above grade Sinclair installations. These sites have been previously disturbed and storage of pipe will result in minimal new disturbance of vegetation and soils.

Directional bore set-up sites will require additional space to accommodate equipment and materials. These sites will be approximately 125 feet x 200 feet or 300 feet x 300 feet in dimension. Water required for directional drilling will be drawn from the City of Mills, Sinclair Oil Refinery, or from the Sweetwater River. Sweetwater River water will be acquired from the Pathfinder Ranch, and will be coordinated through the Wyoming State Engineer's Office (WY SEO).

A temporary crossing structure (such as matting) may be utilized at various locations along the pipeline ROW to transport construction equipment across waterways. **Table 2-1** identifies the temporary surface disturbance associated with the staging and directional bore sites. Additional information on the location of these sites is located in the POD that has been approved by the BLM.

2.3.1 Testing and Maintenance

Hydrostatic testing of the pipeline is required to identify possible weaknesses in the pipeline following construction; during its operation; and following maintenance and repair activities. Sinclair is required to hydrostatically test the pipeline with water to a pressure of 125 percent of the maximum operating pressure of the pipeline. The test pressure will be held for eight hours to verify the integrity of the pipeline. Hydrostatic testing of the pipeline will require approximately 1,500,000 gallons of water. Water for this test will be obtained from the City of Mills and the Sinclair Oil Refinery. Permits and/or agreements for this water use will be obtained from the WY SEO, WDEQ/WQD, and individual landowners. If additional water sources are needed for hydrostatic testing, these sources will be permitted and approved by the BLM before this water is used.

The pipeline will be tested at five sections from north to south. The hydrostatic test water will be discharged on upland areas within the pipeline ROW, or on Sinclair property located near the Sinclair Oil Refinery. The discharge will be limited to approximately 1-cubic foot per second, and flow will be controlled through use of structures such as gated pipe, straw bales, or other structures designed to increase infiltration and reduce the potential for concentrated overland flow. Prior to discharge, water will be tested and treated or filtered to reduce pollutant levels. Discharge volumes will be monitored to ensure concentrated overland flow and rilling does not occur. All water discharges will be permitted through the WDEQ/WQD.

Sinclair will periodically inspect the pipeline in accordance with DOT regulations to check for erosion problems, pipe exposure, hazardous ROW conditions, and potential pipeline leaks. These inspections will be conducted on foot or from a vehicle along the existing road system. If damage to the pipeline is detected, repair or replacement of the pipeline will occur immediately.

2.3.2 Pipeline Operation

Sinclair will monitor the pipeline seven days a week at their Pipeline Control Center, which is located in Sinclair, WY. This ensures an accurate log of their use of the pipeline and can help detect and correct maintenance issues, if they would occur.

2.4 RECLAMATION

Sinclair will be responsible for reclaiming all disturbed areas after the completion of construction activities. At the completion of pipeline installation activities, Sinclair will rip, grade, and contour all disturbed areas to preconstruction conditions to prepare soil for enhanced seed establishment. Topsoil will be spread evenly and disturbed areas will be seeded with native species compatible with plant communities and soil conditions present in the PPPA. During this phase of the project, appropriate measures will be employed to prevent erosion through the use of construction diversion terraces, rip-rap, matting, silt fence, and water bars.

All disturbed areas will be reseeded in accordance with BLM guidelines. In suitable areas, the seed mixture will be drill-seeded to ensure planting at a proper depth for optimum germination. Areas not appropriate for drilling, such as steep slopes, will be broadcast-seeded and raked or chained to cover the seed. Seeding rates for broadcast-seeded areas will be double that used in the drill-seeded areas. Ongoing monitoring of this reclamation effort will be required by the BLM to ensure the establishment of vegetation and correction of any erosion problems. The success of the reclamation effort will be documented and provided to the BLM as a year-end report.

Performance Standards

The following performance standards will be used to determine the attainment of successful revegetation and reclamation:

- By the third growing season at least 80 percent predisturbance ground cover.

- The reclaimed area should be comprised of at least 90 percent of the species contained in the seed mix and/or present on adjacent, undisturbed area. No single species should account for more than 30 percent of the total vegetative cover unless similar to adjacent, undisturbed areas. Invasive species will be controlled. To meet standards, no noxious weed species are allowed.
- Erosion condition of the reclaimed areas is equal to, or in better condition than the adjacent undisturbed area.

2.5 APPLICANT-COMMITTED RESOURCE PROTECTION MEASURES

The following section describes the applicant proposed practices that will be implemented as part of the Proposed Action to avoid or minimize impacts to resources.

2.5.1 Geology, Minerals, Paleontology Resources

1. If paleontological resources were uncovered during ground disturbing activities, Sinclair will suspend all operations that may further disturb such materials and immediately call the BLM. The BLM will make an assessment of significance within an agreed timeframe. Construction activities will be allowed to resume upon written notification from the BLM.

2.5.2 Floodplains and Wetlands

1. Disturbance and impacts to wetlands and streambanks will be avoided through directional drilling under these areas. Wetland and streambank boundaries have been identified and mapped during the environmental analysis process. Directional bore sites will be predetermined and based on mapped wetland and streambank boundaries.

2.5.3 Vegetation and Reclamation

1. Sinclair will seed all disturbed areas with a specific seed mixture for vegetation communities and soil conditions identified and mapped along the pipeline ROW. Additional species in alkaline wetland areas may be utilized based on availability. The following four seed mixtures will be used for the project based on their compatibility with an identified vegetative community:

Dry Loamy/Clay Sites – Characterized as a sagebrush/wheatgrass community with less than and greater than 10-inches of precipitation.

<u>Species</u>	<u>Variety</u>	<u>Lbs. PLS*</u>
Grasses		
Streambank wheatgrass	Sodar	1
Thickspike wheatgrass	Critana	1
Western wheatgrass	Rosana	1
Indian ricegrass	Rimrock (Nez Par)	2
Bottlebrush squirreltail	Sand Hollow	2
Slender wheatgrass	Pryor (San Luis)	4
Little bluegrass “Sandbergh”	High Plains	0.5
Bluebunch wheatgrass	Secor	2

<u>Species</u>	<u>Variety</u>	<u>Lbs. PLS*</u>
Letterman's Needlegrass		2
Shrubs		
Big sagebrush		0.5
Gardners saltbrush		1
Fourwing saltbrush	Wytana	1
Shadescale		0.5
Rubber rabbitbrush		1
Winterfat	Open Range	0.5
Forbs		
Scarlet globemallow		0.5+
Lewis' flax		0.5+
Rocky Mountain beeplant		0.5+
Western yarrow	Yakima	0.5+
Firecracker Penstemon	Richfield	1

Sandy Sites – Characterized as a sagebrush/bunchgrass community with less than or greater than 10 inches of precipitation.

<u>Species</u>	<u>Variety</u>	<u>Lbs. PLS*</u>
Grasses		
Western wheatgrass	Rosana	1
Indian ricegrass	Rimrock	2
Green needlegrass		3
Needle and thread grass		2
Slender wheatgrass	Prior	2
Mutton bluegrass		0.5
Sand dropseed	Borden County	0.5
Canby bluegrass	Canbar	0.5
Shrubs		
Silver sagebrush		0.5
Fourwing saltbrush		1
Antelope bitterbrush		1
Winterfat	Open Range	0.5
White sage		0.5
Forbs		
Firecracker Penstemon		0.5+
Lewis flax		0.5+
Rocky Mountain beeplant		0.5+
Western yarrow		0.5+

Wet Alkaline/Saline Sites – Characterized as a greasewood or saltbush community in a lowland location. Additional alkaline wetland species will be utilized based on seed availability. These species include: alkali cord grass and baltic rush.

<u>Species</u>	<u>Variety</u>	<u>Lbs. PLS*</u>
Grasses		
Western wheatgrass	Rosana	3
Slender wheatgrass	Pryor	4
Alkali sacaton		0.5
Inland saltgrass		2
Basin wildrye	Trailhead	2
Shrubs		
Fourwing saltbrush	Wytana	1
Greasewood		0.5
Gardners saltbrush		1

Riparian Sites – Characterized as a riparian streambank community dominated by sedges.

<u>Species</u>	<u>Variety</u>	<u>Lbs. PLS*</u>
Sedge	Nebraska	2
Rush	Baltic	3

- On disturbed sites where compaction interferes with establishing vegetation, Sinclair will disk, rip, and/or treat the area to condition the site for effective revegetation.
- To prevent the introduction or spread of weeds, Sinclair will power-wash all field vehicles and equipment prior to the beginning of project construction. Additional cleaning may be required based on construction timing or any inspection that is performed that deems such measures necessary to prevent the transport of weed propagules. In addition, field vehicles and construction equipment will be cleaned prior to crossing county lines or entering Steamboat Lakes.
- In accordance with recommendations from the Wyoming Weed & Pest Council, mulches utilized for erosion control purposes will be certified weed-free.
- Sinclair will be responsible for future weed control along the ROW. They will consult with BLM on acceptable weed control methods for the PPPA. Sinclair will comply with the applicable federal and state laws and regulations concerning use of herbicides.

2.5.4 Wildlife

- Construction will not be allowed during the raptor nesting period between February 1 and July 31. Activities related to construction of the pipeline will be prohibited within one mile of active ferruginous hawk and golden eagle nests and within 0.75 miles of all other raptor nests.
- If project construction activities are planned during the raptor breeding season (February 1 through July 31), a raptor nest survey must be completed to ensure nests are not active and/or new nesting sites have not been established along the ROW.

2.5.5 Special Status Terrestrial Wildlife

1. Construction activity is prohibited within a two mile radius of active greater sage-grouse leks during the breeding, egg-laying, and incubation period from March 1 through July 15.
2. Construction activity is prohibited in mountain plover habitat from April 10 through July 10.
3. If construction activities are planned in mountain plover habitat from April 10 through July 10, a mountain plover presence/absence survey is required to determine if the habitat is occupied.

2.5.6 Special Status Plants

1. Construction activities occurring within the many-stemmed spider-flower habitat in the Steamboat Lakes area on Pathfinder National Wildlife Refuge will follow these measures to minimize impacts:
 - a. The construction footprint will be minimized to 35 feet for approximately 2,600 feet in occupied many-stemmed spider-flower habitat.
 - b. A survey will be conducted prior to construction to map populations of the plant occurring within the ROW.
 - c. If areas of particularly high population densities of the plant are encountered, one of two construction methods will be followed:
 - The high population densities will be marked by a qualified biologist or botanist. Topsoil will be removed along the pipeline trench; no other ROW preparation will be done. Pipe joints will be welded outside the marked area and the welded sections will be “walked” into position and placed in the ditch. The topsoil will then be replaced.
 - The second method will be essentially the same; with the exception that the topsoil and trench spoil will be placed on plastic or fabric “pit liner” or equivalent material in order to protect the underlying seedbed.

Both of the above methods will be used, and the success of the reclamation will be monitored by the BLM to determine which method is most effective. A biologist will be present during construction activity to ensure the construction methods are being used.

2.5.7 Air Quality

1. Sinclair has proposed to use dust suppression techniques in certain locations to minimize fugitive dust emissions. Water spraying will be used for dust control.

2.5.8 Visual Resources

1. Reclamation will occur immediately after construction. All disturbed areas on federal, state, and private lands will be final graded and contoured to their original condition.
2. To mitigate visual scarring, Sinclair will seed all disturbed areas with a BLM approved seeding mixtures. Revegetation will be coordinated with the BLM and accomplished using best management practices.

2.5.9 Cultural Resources

1. An open trench inspection will be conducted by an approved cultural resource specialist to prevent impacts to undocumented cultural resources.

2.5.10 Soils

1. Temporary erosion control structures will remain in place until permanent revegetation is successful. Erosion control structures and best management practices for the project are identified in the Construction Stormwater Manual prepared by Sinclair for the project.
2. Sinclair will selectively strip and salvage topsoil or the best suitable medium for plant growth from all disturbed areas. Topsoil will be removed and separated to a depth of 4- to 6-inches for use in reclamation.
3. After the pipeline is in place, soils from the trench will be backfilled and compacted to prevent soil subsidence. All disturbed areas will be final graded to as close to their original condition as possible.
4. All disturbed areas will be seeded with a BLM approved seeding mixture. This will be completed immediately after construction activities are completed.
5. When working in sand dunes, Sinclair will use best management practices to prevent impacts to sensitive soils. The top 4- to 5-inches of the sand will be wind-rowed separately to preserve seeds and enhance the success of reclamation.

2.5.11 Environmental Compliance

1. An environmental compliance monitor will be present during all construction activities. This individual will be responsible for ensuring the open trench cultural resource inspection and biological monitoring are completed. Additional duties will include the inspection of ROW to ensure construction activities are in compliance with BLM and other regulatory agency regulations.

2.5.12 Surface Water Quality

1. All streams and associated wetlands will be directionally bored to prevent impacts to these waterbodies. Sinclair will obtain a USACE Permit and a WY DEQ Stormwater Permit for the project. All of the permit stipulations will be adhered to and all construction activities will be done in a manner that will minimize impacts to water quality.

2. The pipeline will be buried a minimum of 10 to 15 feet below the channel bottom in all waterway installations.
3. All directional bore sites will be at least 80 feet from the ordinary high-water mark of the stream. These sites will be protected with best management practices to prevent release of sediment to waterways.
4. Hydrostatic test water used in conjunction with pipeline testing, and all water used during construction must be extracted from sources that contain sufficient water quantities and with appropriate permits approved by the State of Wyoming.
5. Sinclair will exercise stringent precautions against pipelines breaks and other potential accidental discharges of oil and or hazardous chemicals into streams. If liquid petroleum products are stored on site in sufficient quantities (per the criteria contained in Title 40 CFR Part 112), a Spill Prevention Control and Countermeasures Plan will be developed in accordance with 40 CFR Part 112, dated December 1973 and updated July 2002.
6. Sinclair will implement a list of best management practices to serve as temporary stormwater controls including:
 - a. Temporary berms
 - b. Silt fencing
 - c. Sediment Traps
 - d. Straw bale barriers
 - e. Seed reclamation and mulching

2.5.13 Access

1. State, county roads, two-tracks, and the pipeline ROW will be used to transport crews and equipment needed for project construction.
2. Sinclair will repair any cut or damaged fences resulting from construction activities.

2.5.14 Livestock/Range

1. Sinclair is responsible for notifying grazing lessees prior to entering allotments.
2. Sinclair shall make every effort to avoid disturbing or altering fences.
3. Sinclair's operations will comply with the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for the Public Lands Administered by the BLM in the State of Wyoming.

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter is a summary of the affected environment for all resources potentially impacted by the Proposed Action. These resources are addressed based on management issues identified by the BLM, Rawlins RMP, Casper RMP, and Lander RMP and by interdisciplinary desktop and field analysis of the PPPA.

The Proposed Action could potentially affect critical elements of the human environment as listed in the BLM National Environmental Policy Act Handbook H-1790-1 (BLM 1988). Critical elements of the human environment, their status in the PPPA, and the potential to be affected by the Proposed Action are identified in **Table 3-1**. The items listed as none present will not be addressed in the EA because they would not be affected by the Proposed Action or the No Action Alternative.

Table 3-1
Elements of the Human Environment

Element	Status in the PPPA	Address in Text of EA
Air Quality	Potentially Affected	Yes
Areas of Critical Environmental Concern	Potentially Affected	Yes
Cultural Resources	Potentially Affected	Yes
Environmental Justice	None Present	No
Floodplains	Potentially Affected	Yes
Geology/Minerals/Paleontology	Potentially Affected	Yes
Health and Safety	Potentially Affected	Yes
Native American Religious Concerns	Potentially Affected	Yes
Noise	Potentially Affected	Yes
Noxious Weeds	Potentially Affected	Yes
Prime or Unique Farmlands	None Present	No
Range Resources/Land Use	Potentially Affected	Yes
Hazardous or Solid Waste	Potentially Affected	Yes
Soils	Potentially Affected	Yes
Transportation	None Present	No
Water Resources	Potentially Affected	Yes
Vegetation	Potentially Affected	Yes
Wild and Scenic Rivers	None Present	No
Wetlands/Riparian Zones	Potentially Affected	Yes
Wilderness	None Present	No
Wildlife/Fisheries (Federally threatened/endangered, and sensitive species)	Potentially Affected	Yes

3.2 CLIMATE AND AIR QUALITY

3.2.1 Climate

The PPPA is located in a semiarid mid-continental climate typified by dry, windy conditions, minimal rainfall, and cold winters. Meteorological data for the PPPA was

collected at Rawlins and Casper. This data represents the climatic conditions for Carbon (Rawlins) and Natrona (Casper) counties where the pipeline ROW crosses.

Average annual precipitation at Rawlins is 10 inches, with rainfall and snowfall contributing equally to the total. On average, 52 inches of snow falls during the year, with March and January being the snowiest months. Casper's annual precipitation is similar to Rawlins, although it is slightly higher at 12.5 inches per year (BLM 2006). Also, the annual snowfall at Casper is higher at 77.5 inches per year. The snowiest months at this location trend toward the months of March and April. A persistent regional drought has lowered the annual precipitation total in recent years.

Rawlins averages big differences in temperature throughout the year, typical of a continental climate located far from the influences of an ocean. The average daily temperature during the coldest month of the winter ranges between a low of 5°F and a high of 33°F in January to the warmest month of July with a low of 48°F and a high of 86°F. An average frost free period usually occurs between mid-May and mid-September. In contrast, Casper averages are slightly warmer, with the coldest winter month of January averaging a low of 12°F and a high of 32°F to a warm July low of 53°F and a high of 86°F. The frost free period in Casper is similar to Rawlins (NOAA 2007). Additionally, higher elevations in the PPPA, such as Sand Creek Canyon at 7,000 feet, experience colder temperatures and higher precipitation than Rawlins and Casper.

Wind speeds for Rawlins and Casper average 12 miles per hour, and it is generally from the west, northwest, or southwest. Specific areas of the PPPA may experience strong winds caused by channeling and mountain valley flows in the varied topography.

3.2.2 Air Quality

Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS) are criteria for maximum acceptable concentrations of specific air pollutants. These pollutants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulates less than 10 microns in diameter (PM₁₀), particulates less than 2.5 microns in diameter (PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). The WAAQS, NAAQS, and Prevention of Significant Deterioration (PSD) Class I and II increments are shown in **Table 3-2**.

Very little specific air quality monitoring data is available for the PPPA. The data that is available is more recent and is the result of air quality modeling for large-scale natural gas exploration and production projects in Carbon County and throughout southwestern WY. This modeling data is primarily concerned with determining the emissions output of natural gas wells and ancillary facilities and the impact of these emissions on local and regional air quality. Generally, the air quality in the PPPA is considered good and is designated as attainment for all of the criteria pollutants.

Table 3-2
Wyoming and National Air Quality Standards and PSD Increments

Air Pollutant	Averaging Time Period	Wyoming Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) ¹	National Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) ²	PSD Class I Increment	PSD Class II Increment
PM ₁₀	24-hour Annual	150 50	150 50	8 4	30 17
PM _{2.5}	24-hour Annual	65 15	65 15	None None	None None
Ozone	1-hour	235	235	None	None
Nitrogen Dioxide	Annual	100	100	2.5	2.5
Sulfur Dioxide	3-hour	1,300	1,300	25	512
	24-hour	260	365	5	91
	Annual	60	80	2	20
Carbon Monoxide	1-hour 8-hour	40,000 10,000	40,000 10,000	None None	None None

¹WAAQS – Wyoming Ambient Air Quality Standards (adapted from WDEQ/AQD [2006])

²NAAQS – National Ambient Air Quality Standards (adapted from 40 CFR 50.4-50.12)

3.3 GEOLOGY AND TOPOGRAPHY

The geology discussion focuses on the topography present along the proposed pipeline ROW. A detailed discussion on subsurface geology was omitted because the Proposed Action does not impact deep geologic formations.

3.3.1 Topography

The southern, central, and most of the northern portion of the PPPA is located in the Wyoming Basin, a major physiographic province located in much of southwestern WY. Elevations in the Wyoming Basin typically range from 6,500 to 7,500 feet.

A small segment of the PPPA is located in the Interior Plains physiographic province with elevations ranging from 5,300 feet near Casper to 5,600 at Emigrant Gap as the pipeline ROW crosses Emigrant Gap Ridge in the northern portion of the PPPA. This area is located near Casper and consists of grasslands and generally flat to rolling topography.

The topography of the PPPA is typical of the basins in WY, consisting of badland formations, scattered alkaline playas, sand dunes, and desert shrub flats. Areas of steeper topography in the northern portion of the PPPA are located south of Emigrant Gap Ridge, where elevations range from 6,100 to 6,600 feet as the pipeline ROW crosses Ryan Hill and Poison Spring Creek. This area is characterized by rocky outcrops and badland formations. Areas south of Ryan Hill are characterized by large expanses of Wyoming big sagebrush, gently rolling hills, and alkaline flats as the pipeline ROW crosses Shell Creek, Horse Creek, Pathfinder National Wildlife Refuge, Steamboat Lakes, the

Sweetwater Arm of Pathfinder Reservoir (which is currently not inundated), and Arkansas Flats. Areas of steeper topography in the central to southern portions of the PPPA occur near Sand Creek Canyon, where elevations range between 6,400 feet at the north end of the canyon to 6,800 feet as the pipeline ROW crosses the Killpecker Dune Field, which is characterized by active and vegetated dunes just southeast of the Ferris Mountains. Active and vegetated dune areas also consist of gently rolling to moderately steep areas as the pipeline ROW continues south towards Sinclair. South of the dunes, elevations drop from approximately 6,800 feet to 6,600 feet, with elevations staying relatively consistent (between 6,500 and 6,600 feet) as the pipeline ROW crosses large expanses of Wyoming big sagebrush, saltbush, and desert shrub communities in the Great Divide Closed Basin. The pipeline ROW crosses Sugar Creek and ends at the Sinclair Refinery in Sinclair, WY, which is approximately 6,600 feet in elevation.

3.3.2 Geologic Hazards

Potential geologic hazards in the PPPA consist of earthquakes and mass movements, primarily landslides. Landslides represent the highest potential of all of the geologic hazards present in the PPPA. The South Granite Mountain Fault, located along the north margin of the Ferris Mountains from Cherry Creek on the west to Sand Creek Canyon on the east, represents a fault with documented Quaternary movement in the PPPA (USGS 2007). However, no documented earthquakes have occurred along this fault (University of Wyoming 2002). An earthquake that registered 3.6 on the Richter scale occurred 12 miles north of Sinclair in 1998 (University of Wyoming 2002). This is the only earthquake recorded within close proximity to the PPPA, making it most likely an isolated event.

Mass Movements

Landslide potential in the PPPA is primarily associated with steep slopes in Sand Creek Canyon. Mass movement in this area is associated with steep slopes developed in the formations that contain clay-rich shales that are susceptible to landslides when water saturated. The Sand Creek Canyon portion of the ROW is the only area considered to have a high potential for mass movement in the PPPA (USGS 2007).

Mineral Resources

The PPPA has been utilized for oil and natural gas drilling since the 1940's. Early production in the PPPA focused on oil reserves, and is represented by the Town of Ferris, a historical oil field located adjacent to the pipeline ROW at the base of the Ferris Mountains. Iron Creek Oil Field is an active oil field located adjacent to the pipeline ROW. This field is located south of Casper.

Natural gas exploration is limited in the PPPA, and is represented by some scattered exploratory wells. This area does not have the natural gas development that is currently occurring in the Great Divide and Washakie Basins located to the south of the PPPA.

3.4 PALEONTOLOGY

Sedimentary rock units in the PPPA have the potential to produce significant fossil resources. The major formations in the PPPA known to produce vertebrate and/or other fossil resources include the Lance, Mesaverde Group, White River, and Wind River Formations. Dinosaur and marine remains are primarily found in the Lance Formation. The Wind River and White River Formations are the main units that produce mammal fossils and other small non-mammalian vertebrates. **Table 3-3** identifies the total acreage of fossil-bearing formations found in the PPPA.

Table 3-3
Fossil-Bearing Formations in the PPPA

Formation	Acreage
Lance	54.0
Mesaverde Group	5.0
White River	61.0
Wind River	32.0

Source: USGS 1994

3.5 SOILS

Soil data for the northern portion of the PPPA (Natrona County) was obtained from a Soil Survey that was completed in 1997 by the Natural Resources Conservation Service (NRCS) and provides the most detailed soils information for the pipeline ROW.

Currently, no soil survey has been completed for Carbon County (the southern portion of the PPPA), but Texas Resource Consultants (1981) and Wells et al. (1981) prepared an Order III soil survey for the BLM, in cooperation with the NRCS (then Soil Conservation Service) that covers approximately 32 percent of the PPPA within Carbon County. No soil data was available for approximately 312.0 acres in Carbon County.

A total of 62 soil map units are located within the pipeline ROW (47 Natrona County, 15 Carbon County) encompassing approximately 697.3 acres. A map unit is identified and named according to taxonomic classification of the dominant soils, and units are composed of soil complexes, associations, or unidentified groups. The following information was primarily developed based on data obtained from these resources.

3.5.1 General Soil Characteristics

Soils along the pipeline ROW are variable due to the geographic extent of the PPPA. The majority of soil classes within the PPPA are well drained, and textures such as fine sandy loams, sandy loams, and sandy clay loams are the most common. However, poorly drained complexes with textures that include clay loam and clay are also located within the pipeline ROW. Slopes within the pipeline ROW are most commonly between 0 and 12 percent with gently rolling hills and large expanses of sagebrush, saltbush, and desert shrub flats.

Unique and sensitive soils within Carbon County primarily occur in the Great Divide Basin. The pipeline ROW crosses the Killpecker Dune Field in Carbon County, which is described as a unidirectional dune field oriented like a banner across the Great Divide Basin (Ahlbrandt 1973). Active and vegetated sand dunes crossed by the pipeline ROW in Carbon County will be discussed below.

3.5.2 Project Area Soil Limitations

Important soil characteristics along the pipeline ROW that present potential limitations or hazards during construction and reclamation are summarized in **Table 3-4** and displayed in **Figure 3-1**. In general, soil analysis and inventory of the survey areas for Natrona and Carbon Counties was focused on chemical and physical soil characteristics that are relevant to impact assessment, which includes erosion hazards (based on soil textures, wind erodibility, and land-capability classifications).

Table 3-4
Project Area Soil Limitations

County	Total Acres ¹	Highly Erodible Water ²	Highly Erodible Wind ³	Alkaline-Slight to Moderate ⁴	Alkaline-Moderate to Strong ⁴	Alkaline-Strong to Very Strong ⁴	Hydric ⁵	Cobbly Gravelly ⁶	Active and Vegetated Dunes ⁷
Natrona	466.1	429.0	87.1	85.1	13.2	-	78.16	44.12	-
Carbon	159.5	17.9	64.9	43.7	93.0	22.68	Data not Available	1.86	70.1
Total	625.6	447.0	152.0	128.8	106.2	22.68	78.16	45.98	70.1

¹Total acreage is based on a 75 foot wide construction ROW and available soil data for Natrona and Carbon Counties.

²Includes soils in land capability subclasses 4E through 8E for Natrona County. Includes soils mapped as moderate to severe water erosion hazard for Carbon County.

³Includes soils in wind erodibility group 1 and 2 for Natrona County. Includes soils with sandy textures for Carbon County and areas mapped as vegetated dunes (active dune acreages were not included).

⁴Soil properties mapped as slightly, moderately, strong, or very strongly alkaline for both Natrona and Carbon Counties

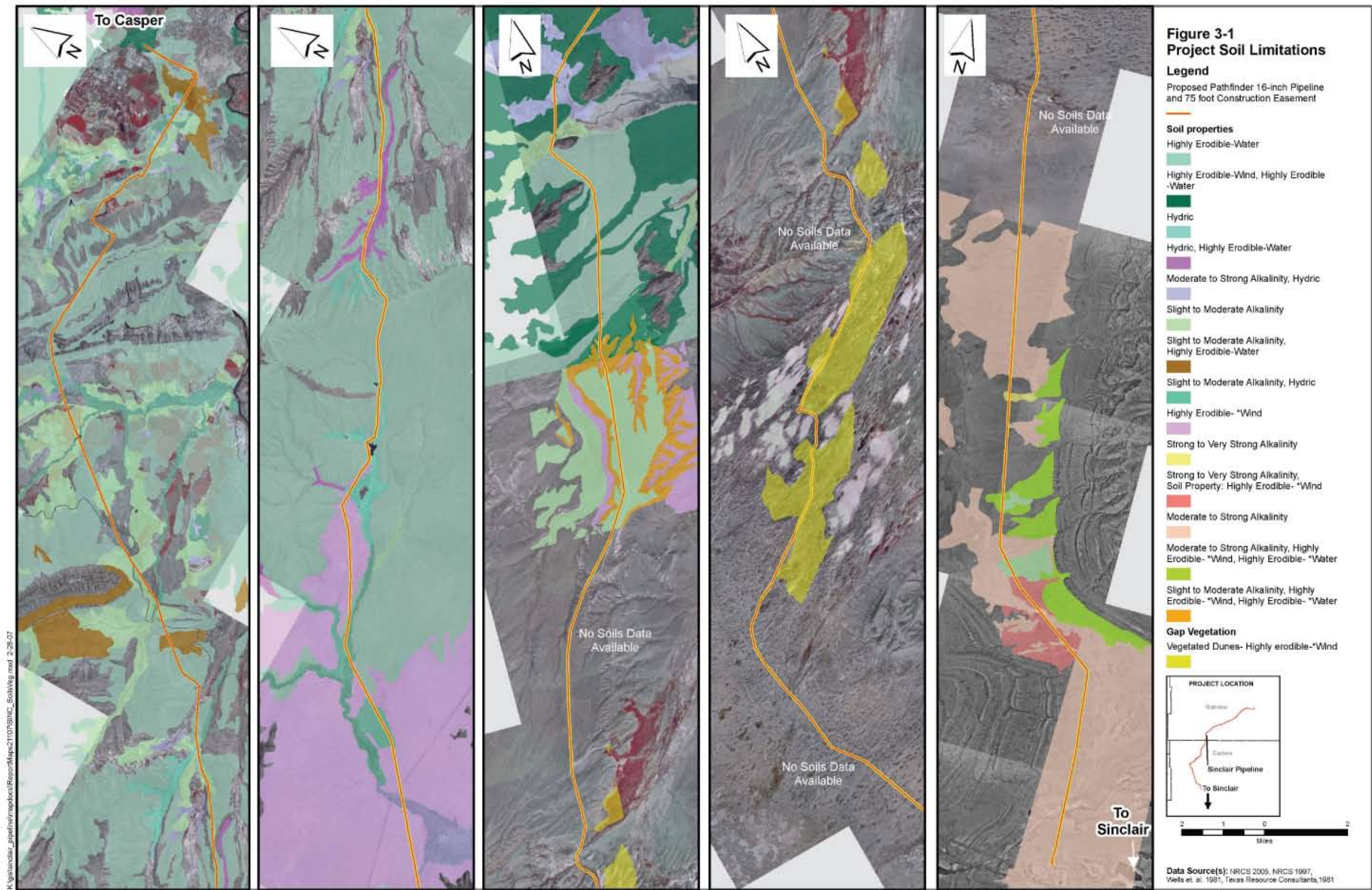
⁵Hydric soils as designated by the NRCS (2007).

⁶Includes soils in Natrona County that have cobbly or gravelly as a modifier and soils in Carbon County listed as having 35 to 80 percent gravel.

⁷Acreages from WY-GAP data (WY GAP Analysis 1996)

3.5.3 Active and Vegetated Dunes

The pipeline ROW crosses the Killpecker Dune Field, southeast of the Ferris Mountains in Carbon County (see **Figure 3-2**). Gently rolling dune habitat within the PPPA totals approximately 70.1 acres and is variable in terms of vegetative cover, which ranges from stabilized dunes dominated by silver sagebrush (56.3 acres) to areas of loose unconsolidated sand with little to no vegetation (13.9 acres) that are typically classified as active dune features. Vegetated dunes within the PPPA are primarily located within Sand Creek Canyon and just south of Sand Creek Canyon within the PPPA and are displayed in **Figure 3-1**.



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Figure 3-2
Aerial view of the Ferris Mountains and
sand dunes. (Photograph taken from Bradley Peak)

Sand dunes in the Ferris and Seminoe Mountains are described as clay-rich fine psammments derived from wind-blown Quaternary alluvium (Ahlbrandt 1973). Particle size is described as coarse (0.5-1.0 mm) and relatively uniform (B Heidel 2005). In addition to being a unique area within the PPPA, it is also highly susceptible to wind erosion when vegetation is removed.

3.5.4 Highly Erodible Soils

The majority of soils in Natrona County (466.1 acres) are subject to water erosion if they are not adequately protected (NRCS 1997). These soils typically have a high runoff potential (116.6 acres are shallow with bedrock within 20-40 inches of the soil surface) and textures range from clay loam to sandy clay loams and fine sandy loams. Soils with a larger amount of clay are typically more susceptible to water erosion. However, erosion factors are also influenced by climate, topography, and land use practices.

In Carbon County, shallow soils formed in residuum derived dominantly from shale (17.9 acres) are rated as moderate to severe in terms of water erosion. These soils are also strongly alkaline, calcareous, and textures generally include sandy clay loams, clay loams, and loams. The majority of these soils are located just north of Sinclair along the pipeline ROW.

3.5.5 Wind Erosion

Soil texture is important with respect to determining the hazard of wind erosion (NRCS 2005). Approximately 87.1 acres of soils within Natrona County are considered highly susceptible to wind erosion. Soil textures, such as very fine sand, fine sand, sand, or coarse sand are typically the most susceptible to wind erosion. In Natrona County, soils

with a wind erodibility index of one or two were included in the highly erodible wind category.

In Carbon County, fine sandy loams typically have the highest susceptibility to wind erosion within the PPPA (moderate to severe). Excessively drained soils with coarse sandy textures are also found within the PPPA. Coarse sandy textures are primarily associated with vegetated dunes located within and south of Sand Creek Canyon. There is currently no soil data available for this area, but based on vegetation, field observations, and the Wyoming Gap Analysis Project (WY-GAP) data, approximately 56.3 acres of vegetated dunes within the PPPA have been included in the highly erodible wind category for Carbon County (see **Table 3-4**). Susceptibility to wind erosion in these areas is considered severe.

3.5.6 Alkaline Soils

Alkaline soils dominated by salt-tolerant vegetation with slight to strong saline properties are located along the pipeline ROW and total approximately 257.7 acres (see **Figure 3-1**). Low precipitation and high evaporation rates contribute to the development of alkaline soil conditions within the PPPA. In addition, poorly drained soils generally located within basin floors and drainageways tend to be slightly saline or moderately saline. The location of saline soils is important for revegetation purposes.

3.6 RANGE RESOURCES

The pipeline ROW crosses 16 BLM grazing allotments that are managed by the CFO and RFO (**Figure 3-3**). Allotment acreages are presented in **Table 3-5** and boundaries are displayed on **Figure 3-3**.

Table 3-5
Grazing Allotments and Animal Unit Months (AUMs)
Currently Permitted within the Pipeline ROW

Allotment Name	BLM Managing Field Office	Total Acres	Total Acres in PPPA	Total Public AUMs	Total Private AUMs	Total State AUMs
Bates Hole SDW	Casper	8,146	5	0	-	-
Emigrant Gap	Casper	4,205	12	45	-	-
Oil Mountain	Casper	7,174	27	296	-	-
Oscar T Annis	Casper	6,417	7.5	217	-	-
Pathfinder	Casper	39,849	50.5	4,234	-	-
Poison Spider	Casper	38,137	5	1,074	-	-
Rattlesnake	Casper	72,687	156	7,017	-	-
Rimrock West	Casper	5,922	29	195	-	-
Steamboat Lake	Casper	8,826	34	261	-	-
UC Ranch	Casper	12,360	58	998	-	-
Bar Eleven	Rawlins	49,345	8	11,419	1,317	300
Buzzard	Rawlins	78,569	129	11,413	2,398	2,298
Buzzard Ranch MEA	Rawlins	5,954	3	339	8163	103
Haystack	Rawlins	89,795	159	3,783	3,814	202
Station 8	Rawlins	6,351	18	1,257	-	-
Stone	Rawlins	110,240	152	12,899	5,104	1,641

Source: BLM 2001 and BLM 2002a

3.7 WILDLIFE AND FISHERIES

The PPPA is located in the sagebrush steppe plant community that is typical of the high inter-mountain desert of south-central WY. The primary vegetation community in the PPPA is Wyoming big sagebrush steppe/mixed grass wildlife habitat, which totals approximately 490.0 acres. Additional habitat types discussed below include mixed grass prairie, saltbush flats, riparian, open water, and wetland habitats. Many common species of birds, mammals, amphibians, and reptiles are found within the PPPA.

3.7.1 Wyoming Big Sagebrush Habitat

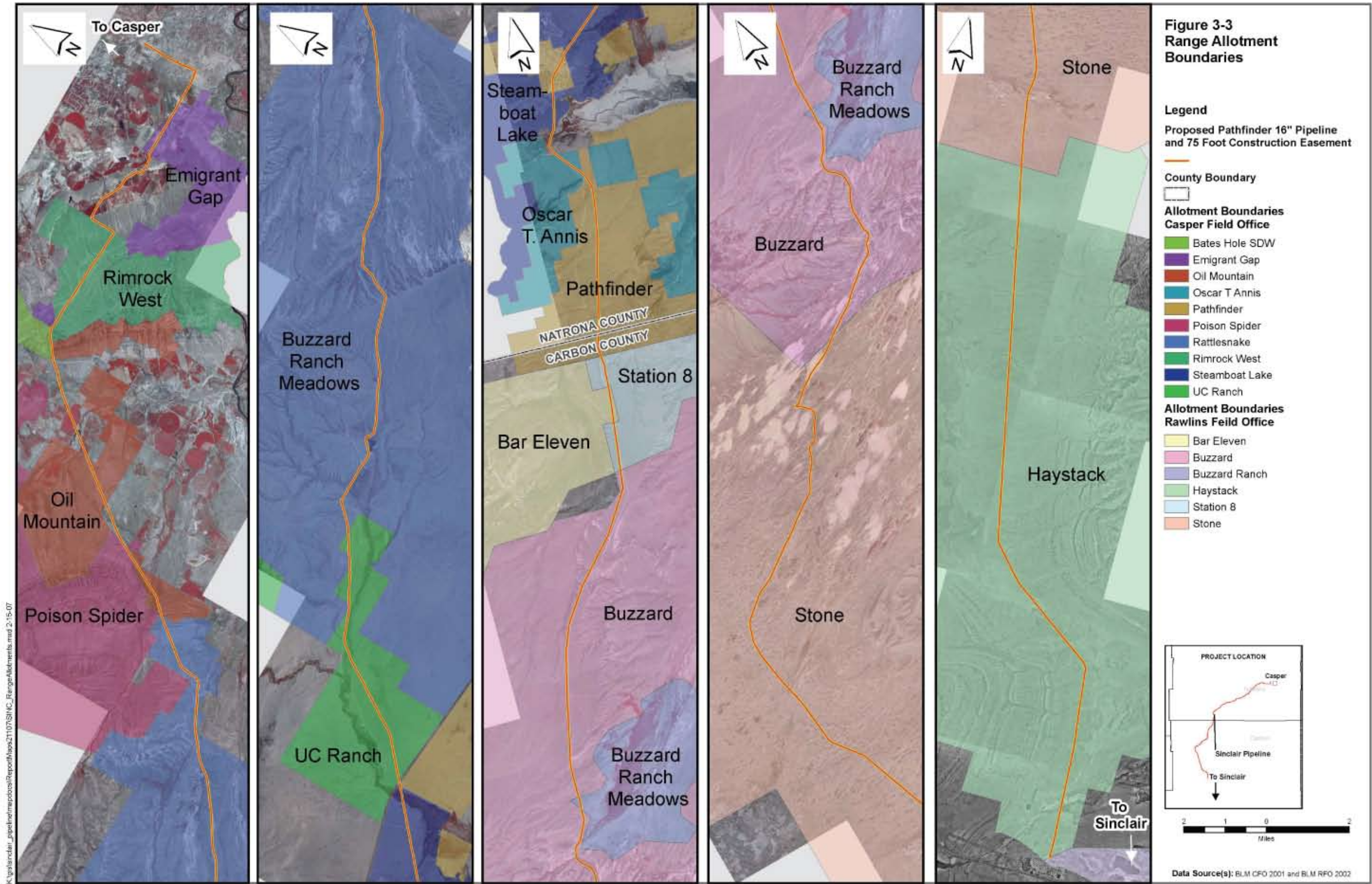
Wyoming big sagebrush provides important cover and forage for a wide range of wildlife and bird species that depend on the evergreen leaves and abundant seed production as an important winter food source. This vegetation community is dominant in the central portion of the PPPA totaling 490.0 acres and provides excellent browse for large mammals including antelope and mule deer. In addition to providing important nesting and brood rearing habitat for greater sage-grouse, Wyoming big sagebrush is a primary food item for adult sage-grouse throughout the year (Connelly et al. 2004).

3.7.2 Mixed Grass Prairie Habitat

This vegetation community can be found in the northern portion of the PPPA (just south of Casper). Mixed-grass prairie provides important habitat for smaller mammals such as field mice, rabbits, and prairie dogs, which serve as important prey source for raptors and larger mammals (such as foxes and coyotes). In addition, this habitat is important for ground nesting birds. Urban and agricultural developments in the northern portion of the PPPA just south of Casper have decreased the amount of mixed-grass prairie available for wildlife use.

3.7.3 Riparian Habitat

Riparian habitat is the transition zone between aquatic and upland habitat. This type of habitat is related to and influenced by surface or subsurface waters, especially the margins of streams, lakes, ponds, wetlands, seeps, and ditches. Riparian features throughout the PPPA are very limited and are only associated with stream or creek corridors (primarily Sand Creek as it flows through Sand Creek Canyon). The limited riparian habitats in the PPPA provide important habitat for wildlife due to the numbers and richness of wildlife they support, and their value as a general wildlife movement corridor. In general, riparian habitat within the PPPA lacks large trees that are used for nest and roost sites by a wide range of avian species.



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3.7.4 Open Water Habitats

Open water habitats include natural systems such as lakes and pools along with man-made waters such as ditches, ponds, and reservoirs utilized for livestock operations. Open water habitats serve as a feeding ground for waterfowl such as ducks, geese, and great-blue herons. Major open water bodies across the PPPA are limited. Several bodies of open water associated with livestock operations are located within the pipeline ROW.

3.7.5 Wildlife Occurrence

Information regarding the potential occurrence of federally threatened or endangered species, species of concern, big game, raptors, and greater sage-grouse on and adjacent to the PPPA was obtained from a variety of sources. Information pertaining to both federally listed and sensitive species was obtained from the USFWS, BLM, Wyoming Department of Game and Fish's (WGFD)-Wildlife Observation System (WOS), WGFD regional biologists, and the Wyoming Natural Diversity Database (WYNDD). WGFD big game herd unit annual reports were used for herd unit population statistics. Raptor nest locations were obtained from the WGFD and the BLM (CFO and RFO). The analysis area for the greater sage-grouse consisted of the PPPA plus a two mile buffer. The analysis area for raptors included the PPPA plus a one mile buffer. **Figures 3-4 through 3-5** show the locations of critical wildlife resources located within and adjacent to the PPPA.

Existing wildlife information for the PPPA was supplemented through field surveys conducted by Parametrix Consulting during the summer of 2006, which included: (1) a survey to map additional raptor nests within one mile of the pipeline ROW, (2) ground-truthing and mapping of white-tailed prairie dog towns, (3) identification and mapping of potential mountain plover habitat, and (4) performing a general habitat assessment to determine the occurrence potential for sensitive wildlife species.

3.7.6 Big Game

Three big game species: pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and elk (*Cervus elaphus*) utilize the PPPA during the year. Pronghorn are the most abundant big game species within the PPPA. Three seasonal ranges, designated by the WGFD, occur within the PPPA: crucial winter/yearlong, winter/yearlong, and spring/summer/fall. Crucial big game range (e.g., crucial winter/yearlong range) includes any seasonal range or habitat component that has been documented as a determining factor in a population's ability to maintain itself at a specified level over the long-term. Winter range is used by substantial numbers of animals only during the winter months (November through April). Winter/yearlong ranges are occupied throughout the year, but during winter there is a significant influx of additional animals into the area from other seasonal ranges. Spring/summer/fall ranges are more variable but documented habitats are commonly used from May 1 through November 30.

3.7.6.1 Pronghorn Antelope

The PPPA is located within three Pronghorn Herd Units (Beaver Rim, North Ferris, and South Ferris) and approximately 172.4 acres within the proposed pipeline ROW has been designated crucial winter/yearlong range. The 2005 population estimates for these Herd Units are listed in **Table 3-6**. The PPPA is located within Hunt Areas 65-69, 74, 106, 62, and 63 where the hunter success rates for 2005 ranged between 83.7 and 106.8 percent (WGFD 2005). **Figure 3-4** illustrates the antelope's crucial winter/yearlong range in the PPPA. Additional herd information has also been presented in **Table 3-6**.

3.7.6.2 Mule Deer

The PPPA is located within the Ferris Mule Deer Herd Unit and approximately 4.0 acres within the PPPA have been designated crucial winter/yearlong range. The 2005 population estimate for the Ferris Herd Unit was 2,479 (WGFD 2005). This estimate is 49 percent below the WGFD management objective of 5,000. The PPPA is located within Hunt Area 87 where the 2005 hunter success rate was 88.4 percent (WGFD 2005).

3.7.6.3 Elk

The majority of the PPPA lacks suitable habitat to support any substantial number of elk. However, some elk may be occasionally observed near the Ferris Mountains. The PPPA is located within two elk herd units (Ferris and Rattlesnake); however, almost all of the PPPA has been designated as limited importance to the species or does not contain enough elk to be considered important habitat. Three seasonal ranges have been designated for elk within the PPPA: crucial winter/yearlong (1 acre), winter/yearlong (22.0 acres), and spring/summer/fall range (6.2 acres). The PPPA is located within Hunt Areas 22-23 and 111, where the 2005 hunter success rates ranged between 27.5 and 52.8 percent (WGFD 2005).

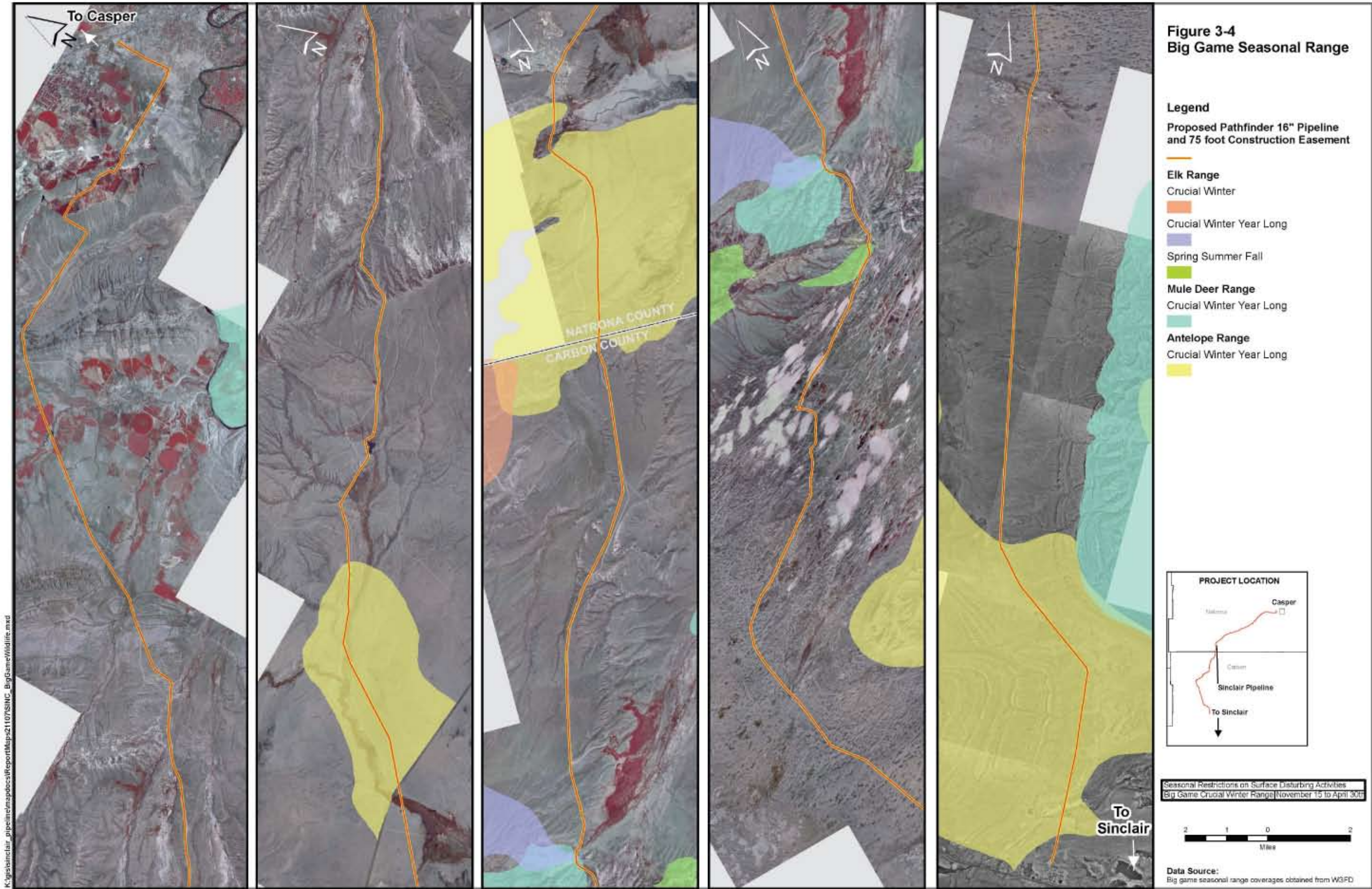


Table 3-6
Herd Unit Data and Statistics for Antelope, Mule Deer, and Elk

Species	Herd Code	Herd Unit and Area (square miles)		Hunt Area(s)	Population Estimate 2005	Population Objective 2005
Pronghorn	632	Beaver Rim	4,091	65-69, 74, 106	26,730	25,000
	636	North Ferris	513.0	63	4,532	5,000
	637	South Ferris	731.0	62	5,328	6,500
Mule Deer	647	Ferris	1,222	87	2,479	5,000
Elk	639	Ferris	1,244	22,111	530	350
	742	Rattlesnake	1,264.3	23	Not Available	200

Source: WGFD 2005

3.7.7 Upland Game Birds

3.7.7.1 Greater Sage-Grouse

The PPPA is located within the extensive sagebrush/grassland habitat of south-central WY where greater sage-grouse (*Centrocercus urophasianus*), a sagebrush obligate, are common inhabitants. Sagebrush habitat within the PPPA is dominated by Wyoming big sagebrush (490.0 acres). Strutting grounds (leks), nesting, brood-rearing, and wintering habitats are all important habitat components required by greater sage-grouse. Sometimes these habitats are contiguous and other times they occur in a patchy, disconnected pattern (Call and Maser 1985). Approximately 50 percent of greater sage-grouse hens usually nest within two miles of leks (Braun *et al.* 1977, Hayden-Wing *et al.* 1986, Wakkinen *et al.* 1992, Wallestad and Pyrah 1974). As a result, any sagebrush habitat within two miles of a lek is considered potential nesting habitat. In response to petitions to list the greater sage-grouse under the Endangered Species Act (ESA), the USFWS completed a status review of this species throughout its range and on January 7, 2005 determined that it did not warrant protection under the ESA (USFWS 2005). The greater sage-grouse is considered a sensitive species by the BLM in WY.

Based upon annual surveys conducted by WGFD and BLM there are 15 occupied leks within two miles of the PPPA (see **Figure 3-5**). Only one proposed temporary work area, (Ferris Station T 26N R 87W Section 25), is located within two miles of an occupied lek. The WGFD defines an occupied lek as one that has been active during at least one strutting season within the last ten years. Management protection is afforded to occupied leks and any area along the pipeline ROW located within a two-mile radius of a lek will be subject to seasonal restrictions to protect nesting greater sage-grouse.

3.7.8 Raptors

As indicated in the WOS (WGFD 2006) and based on habitat present within the PPPA ROW, raptor species known to occur on or near the ROW include golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus cyaneus*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk (*Buteo swainsoni*), rough-legged hawk

(*Buteo lagopus*), ferruginous hawk (*Buteo regalis*), American kestrel (*Falco sparverius*), merlin (*Falco columbarius*), prairie falcon (*Falco mexicanus*), short-eared owl (*Asio flammeus*), great-horned owl (*Bubo virginianus*), and burrowing owl (*Athene cunicularia*). The pipeline ROW crosses areas adjacent to low bluffs and steeper rocky terrain that provide suitable sites for raptor nesting and roosting. However, riparian habitat such as large cottonwoods or other large trees that also provide suitable nesting and roosting habitat are limited. Raptor species observed during field surveys conducted in the summer of 2006 included: golden eagles, ferruginous hawks, northern harriers, red-tailed hawks, Swainson's hawks, and burrowing owls.

3.7.8.1 Nesting Raptors

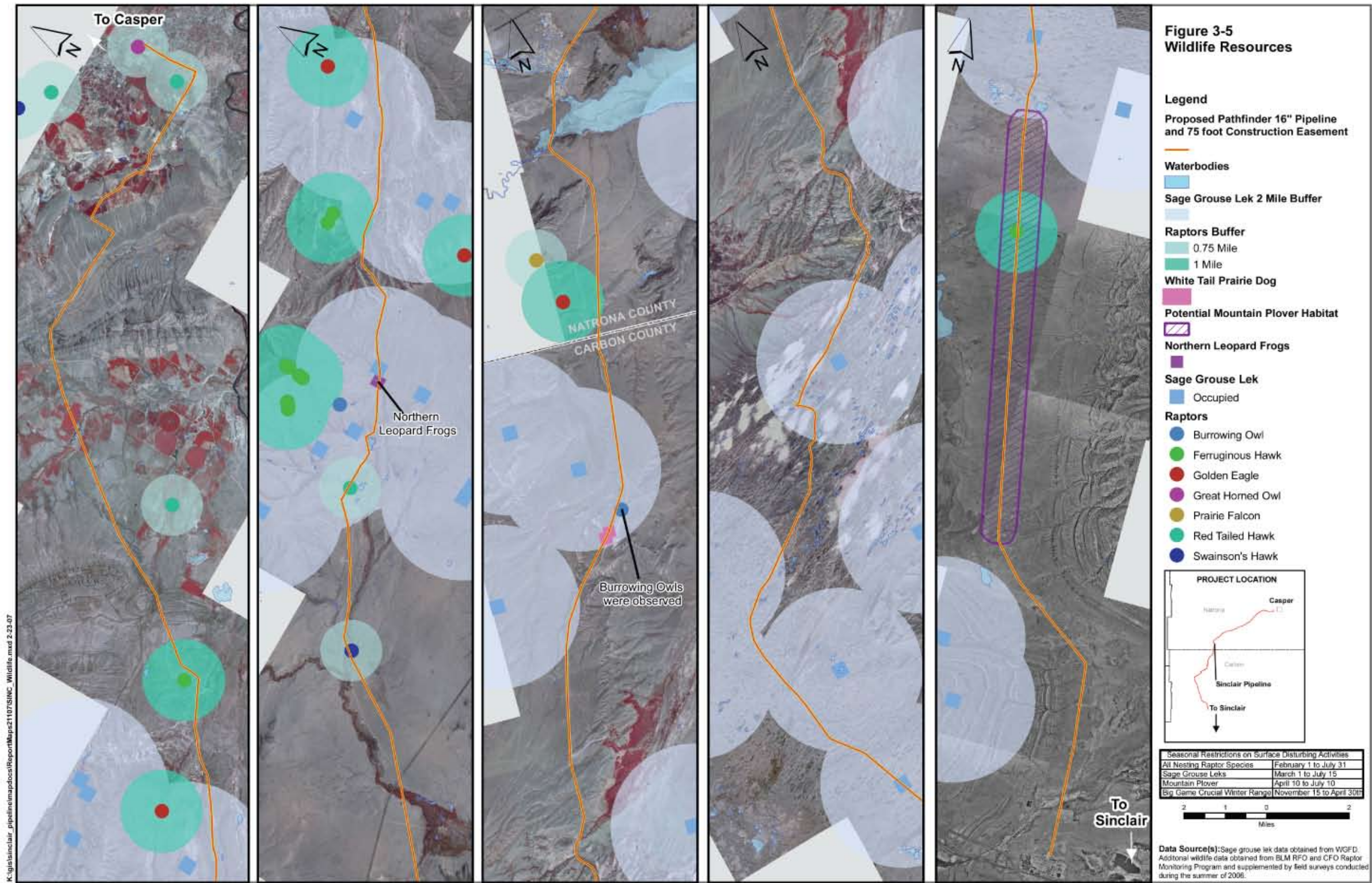
Raptor nest data was obtained from the BLM Raptor Monitoring Program. This program was developed to track and document nest locations and apply management prescriptions for proposed activities. The analysis area for raptors included the PPPA plus a one mile buffer. Field surveys conducted during the summer of 2006 also located and mapped several raptor nests within one mile of the PPPA.

Based upon data obtained from the BLM, as well as field data collected in 2006, 17 nests are located within one mile of the PPPA (two burrowing owl, six ferruginous hawk, one golden eagle, one great-horned owl, two red-tailed hawks, one Swainson's hawk, and four unknown nests) see **Figure 3-5**. An unknown raptor nest could be a hawk, owl, or eagle. All 17 nests have been mapped as "non-historical," which is defined as a nest that still presents a nesting opportunity.

Management protection is afforded to nests and portions of the PPPA are subject to seasonal restrictions to protect nesting raptors. In addition, all raptors and their nests are protected from take or disturbance under the Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703, and the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668.

3.7.9 Special Status Species – Wildlife

Special status species include: federally threatened, endangered, and candidate species listed by the USFWS (Under the ESA of 1973 as amended). The USFWS has determined that two wildlife species listed as either threatened, endangered, or candidate under the ESA may potentially be found on lands administered by the RFO and CFO (USFWS 2006). These species are the threatened bald eagle (*Haliaeetus leucocephalus*) and endangered black-footed ferret (*Mustela nigripes*).



3.7.9.1 Threatened and Endangered Species – Wildlife

Black-footed Ferret and Associated White-tailed Prairie Dog Colonies

The black-footed ferret's original distribution in North America closely corresponded to that of prairie dogs (USFWS 1998). In WY, white-tailed prairie dog (*Cynomys leucurus*) colonies provide habitat for black-footed ferrets. Ferrets depend almost exclusively on prairie dogs for food, and they also use prairie dog burrows for shelter, parturition, and raising their young (USFWS 1998). The USFWS, in coordination with the WGFD, has developed an initial list of habitat blocks that are not likely to be inhabited by black-footed ferrets (commonly referred to as block-cleared). The majority of habitat within the pipeline ROW has been block-cleared; however, several white-tailed prairie dog complexes near the Continental Divide (Pathfinder Complex) have not been block-cleared (USFWS 2004). These white-tailed prairie dog colonies were located within the PPPA and required further investigation to determine if black-footed ferret surveys would be necessary.

According to USFWS guidelines, white-tailed prairie dog colonies greater than 200 acres in size represent potential habitat for black-footed ferrets. In addition, a prairie dog complex consists of two or more neighboring prairie dog towns less than 7 km (4.3 miles) from each other. Two white-tailed prairie dog colonies, totaling 15.5 acres, are located north of Pathfinder National Wildlife Refuge in Natrona County (see **Figure 3-5**). These two colonies have not been block-cleared. Field surveys conducted during the summer of 2006 determined that the extent of active white-tailed prairie dog colonies within non block-cleared areas was significantly less than previously mapped. Indicators of activity used during field surveys included fecal pellets, open burrow entrances, and tracks. Boundaries and acreages of white-tailed prairie dog colonies were subsequently revised. Large annual fluctuations of white-tailed prairie dog colonies have been reported in the Shirley Basin (WY). Moreover, population information from Colorado and Utah analyzed for a 2004 Conservation Assessment reported that populations of white-tailed prairie dogs fluctuated year to year with calculated coefficients of variations ranging from 14 to 91 percent in areas surveyed (Seglund et al. 2004).

A search of the WGFD's WOS database determined that there are no documented occurrences or sightings of black-footed ferrets within the PPPA (WGFD 2006). The potential for black-footed ferrets to occur within the PPPA is low due to the lack of suitable habitat.

Bald Eagle

In WY, primary bald eagle wintering areas are typically characterized by abundant food sources along major rivers that remain unfrozen whereby fish and waterfowl are available, and near ungulate winter ranges that provide carrion (Montana Bald Eagle Working Group 1990). Wintering bald eagles are also known to roost and forage along open water and in large trees, usually in secluded locations that offer protection from harsh weather. Bald eagles have been occasionally observed within the PPPA, most frequently during the months of December and January (WGFD 2006); however, no communal bald eagle winter roosts are known to exist on or near the PPPA. Moreover,

suitable foraging and roosting habitat is limited within the PPPA due to the small amount of open water and riparian habitat (cottonwood groves) that provide favorable habitat conditions and a prey source for bald eagles.

Bald eagle nesting habitat in WY is generally found in groves of mature cottonwoods located along streams and rivers (BLM Statewide Programmatic Bald Eagle BA 2003a). Eleven bald eagle nests are known to occur within the CFO; however, none of these nests occur on lands administered by the BLM and all nests occur in riparian habitats that are associated with the North Platte River (Statewide Programmatic Bald Eagle BA 2003a). Documented bald eagle nests within the RFO are located in riparian habitat associated with the North Platte, Encampment, and Snake Rivers (BLM Statewide Programmatic Bald Eagle BA 2003a). In summary, based on raptor nest data obtained from the BLM, and field surveys conducted during the summer of 2006, no bald eagle nests occur within the PPPA and suitable habitat for roosting and foraging is low.

3.7.10 Sensitive Species – Wildlife

The BLM has identified sensitive species occurring on their lands in WY. The objective of the sensitive species designation is to ensure the overall welfare of these species is considered when undertaking actions on public lands, and ensure they do not contribute to the need to list the species under the provisions of the ESA. It is the intent of this policy to emphasize the inventory, planning consideration, management implementation, monitoring, and information exchange for the sensitive species on the list. The BLM Sensitive Species List is meant to be dynamic and will be reviewed annually with recommendations from BLM biologists and appropriate non-BLM authorities for additions and deletions (BLM 2002b). Additionally, the WYNDD was reviewed for potential occurrences of species of concern within the PPPA (WYNDD 2006). In total, 32 species (nine mammals, 15 birds, three amphibians, one reptile, and four fish) occur on the RFO and CFO Sensitive Species Lists. **Table 3-7** lists the species of concern potentially occurring in the PPPA.

Table 3-7
Sensitive Wildlife and Fish Species Potentially Present on or near the PPPA

Common Name	Scientific Name	Habitat	Sensitivity Status ¹	Occurrence Potential*	Field Office
Mammals					
Dwarf shrew	<i>Sorex nanus</i>	Mountain foothill shrub, grasslands	G4/S2S3, NSS3	Unlikely	RFO, CFO
Fringed myotis	<i>Myotis thysanodes</i>	Conifer forests, woodland-chaparral, caves, and mine	G5/S1B, S1N, NSS2	Possible	RFO, CFO
Long-eared myotis	<i>Myotis evotis</i>	Conifer forests, caves and mines	G5/S1B, S1?N, NSS2	Unlikely	RFO, CFO
Pygmy rabbit	<i>Brachylagus idahoensis</i>	Basin-prairie and riparian shrub	G4/S2, NSS3	Unlikely	RFO
Swift fox	<i>Vulpes velox</i>	Grasslands	G3/S2A3	Possible	RFO, CFO
Spotted bat	<i>Eduerma maculatum</i>	Cliffs over perennial water, basin-prairie shrub	G4/S1B,SZ?N, NSS2	Unlikely	CFO

Common Name	Scientific Name	Habitat	Sensitivity Status ¹	Occurrence Potential*	Field Office
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Forests, basin-prairie shrub, caves and mines	G4/S1B, S2N, NSS2	Possible	RFO CFO
White-tailed prairie dog	<i>Cynomys leucurus</i>	Basin prairie shrub, grasslands	G4/S2S3, NSS3	Present	RFO CFO
Wyoming pocket gopher	<i>Thomomys clusius</i>	Meadows with loose soil	G2/S1S2, NSS4	Possible	RFO
Birds					
Baird's sparrow	<i>Ammodramus bairdii</i>	Grasslands, weedy fields	G4/S1B, SZN, TBNG	Possible	RFO CFO
Brewer's sparrow	<i>Spizella breweri</i>	Basin-prairie shrub	G5/S3B, SZN	Present	RFO CFO
Chestnut-collared longspur	<i>Calcarius ornatus</i>	Short and mixed grass prairie	G5/S1	Likely	-
Sage sparrow	<i>Amphispiza belli</i>	Basin-prairie shrub, mountain-foothill shrub	G5/S3B, SZN	Likely	RFO CFO
Sage thrasher	<i>Oreoscoptes montanus</i>	Basin-prairie shrub, mountain-foothill shrub	G5/S3B, SZN	Likely	RFO CFO
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>	Grasslands	G4T3/S1	Likely	RFO
Ferruginous hawk	<i>Buteo regalis</i>	Basin-prairie shrub, grassland, rock outcrops	R2, G4/S3B, S3N, NSS3	Present	RFO CFO
Golden eagle	<i>Aquila chrysaetos</i>	Open shrubsteppe and grassland habitats	G5/S3B	Present	-
Greater sage-grouse	<i>Centrocercus urophasianus</i>	Basin-prairie shrub, mountain-foothill shrub	G5/S3	Present	RFO CFO
Loggerhead shrike	<i>Lanius ludovicianus</i>	Basin-prairie shrub, mountain-foothill shrub	G5/S4B, SZN,	Present	RFO CFO
Long-billed curlew	<i>Numenius americanus</i>	Grasslands, plains, foothills, wet meadows	G5/S3B, SZN, NSS3	Present	RFO CFO
Mountain plover	<i>Charadrius montanus</i>	Areas with low/sparse vegetation, bare ground and prairie dog colonies	G2/S2B, SZN	Likely	RFO CFO
Northern goshawk	<i>Accipiter gentiles</i>	Conifer and deciduous forests	G5/S23B, S4N, NSS4	Unlikely	RFO CFO
Peregrine falcon	<i>Falco peregrinus</i>	Tall cliffs	G4/T3/S1B, S2N, R2, NSS3	Unlikely	RFO CFO

Common Name	Scientific Name	Habitat	Sensitivity Status ¹	Occurrence Potential*	Field Office
Sandhill crane	<i>Grus Canadensis</i>	Wet-moist meadow grasslands, sedge meadows, irrigated meadows and marshes and agricultural areas	G5/S3B, S5N	Possible	-
Short-eared owl	<i>Asio flammeus</i>	Open meadow and grassland habitat	G5/S2	Possible	-
Trumpeter swan	<i>Cygnus buccinator</i>	Lakes, ponds, rivers	G4/S1B, S2N, NSS2	Possible	RFO CFO
Western burrowing owl	<i>Athene cunicularia</i>	Grasslands, basin-prairie shrub (prairie dog colonies)	G4/S3B, SZN, NSS4	Present	RFO CFO
White-faced ibis	<i>Plegadis chihi</i>	Marshes, wet meadows	G5/S1B, SZN, R2, NSS3	Possible	RFO CFO
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	Open woodlands, streamside willow and alder groves	G5/S2B, SZN, TBNG, NSS2	Unlikely	RFO CFO
Amphibians					
Boreal toad (Northern Rocky Mtn Population)	<i>Bufo boreas boreas</i>	Pond margins, wet meadows, riparian areas- 7,500-12,000 feet	G4T4/S2, R2, R4, NSS2	Unlikely	RFO
Great Basin spadefoot Toad	<i>Spea intermontanus</i>	Spring seeps, permanent and temporary waters	G5/S4, NSS4	Possible	RFO
Northern leopard frog	<i>Rana pipiens</i>	Beaver ponds, permanent water in plains and foothills	G5/S3, NSS4	Present	RFO CFO
Reptiles					
Northern plateau lizard	<i>Sceloporus undulates elongtus</i>	Rock outcrops and canyon walls in sagebrush communities	G5T5/S1	Possible	-
Fish					
Bluehead sucker	<i>Catostomus discobolus</i>	Bear, Snake and Green drainages- all waters	G4/S2S3, NSS1	Unlikely	RFO
Colorado River cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>	CO River drainage-clear mountain streams	G4T2T3/S2, NSS2	Unlikely	RFO
Flannelmouth sucker	<i>Catostomus latipinnis</i>	CO River drainage, large rivers, streams and lakes	G3G4/S3, NSS1	Unlikely	RFO
Roundtail chub	<i>Gila robusta</i>	CO River drainage, mostly large rivers, also streams and lakes	G2G3/S2?, NSS1	Unlikely	RFO

Sources: BLM (2002b), WYNDD (2006)

*Occurrence potential based upon presence of suitable habitat, known distribution, WYNDD records, WGFD records, and field surveys.

Definition of Status:

G Global rank: Rank refers to the range-wide status of a species.

T Trinomial rank: Rank refers to the range-wide status of a subspecies or variety.

S State rank: Rank refers to the status of the taxon (species or subspecies) in Wyoming. State ranks differ from state to state.

1 Critically imperiled because of extreme rarity (often known from 5 or fewer extant occurrences or very few remaining individuals) or because some factor of a species' life history makes it vulnerable to extinction.

2 Imperiled because of rarity (often known from 6-20 occurrences) or because of factors demonstrably making a species vulnerable to extinction.

3 Rare or local throughout its range or found locally in a restricted range (usually known from 21-100 occurrences).

4 Apparently secure, although the species may be quite rare in parts of its range, especially at the periphery.

5 Demonstrably secure, although the species may be rare in parts of its range, especially at the periphery.

H Known only from historical records. 1950 is the cutoff for plants; 1970 is the cutoff date for animals.

X Believed to be extinct.

A Accidental or vagrant: A taxon that is not known to regularly breed in the state or which appears very infrequently (typically refers to birds and bats).

B Breeding rank: A state rank modifier indicating the status of a migratory species during the breeding season (used mostly for migratory birds and bats)

N Nonbreeding rank: A state rank modifier indicating the status of a migratory species during the non-breeding season (used mostly for migratory birds and bats)

ZN or ZB Taxa that are not of significant concern in Wyoming during breeding (ZB) or non-breeding (ZN) seasons. Such taxa often are not encountered in the same locations from year to year.

U Possibly in peril, but status uncertain; more information is needed.

Q Questions exist regarding the taxonomic validity of a species, subspecies, or variety.

? Questions exist regarding the assigned G, T, or S rank of a taxon.

R2 Designated sensitive in U.S. Forest Service Region 2 (Rocky Mountain Region).

R4 Designated sensitive in U.S. Forest Service Region 4 (Intermountain Region).

WGFD Native Species Status Codes - Fish and Amphibians

NSS1 - Populations are physically isolated and/or exist at extremely low densities throughout range. Habitats are declining or vulnerable. Extirpation appears possible. The Wyoming Game and Fish Commission mitigation category for Status 1 species is "Vital". The mitigation objective for this resource category is to realize "no loss of habitat function". Under these guidelines, it will be very important that the project be conducted in a manner that avoids alteration of habitat function.

NSS2 - Populations are physically isolated and/or exist at extremely low densities throughout range. Habitat conditions appear to be stable. The Wyoming Game and Fish Commission mitigation category for Status 2 species is also "Vital". The mitigation objective for this resource category is to realize "no loss of habitat function". Under these guidelines, it will be very important that the project be conducted in a manner that avoids alteration of habitat function.

NSS3 - Populations are widely distributed throughout its native range and appear stable. However, habitats are declining or vulnerable. The Wyoming Game and Fish Commission mitigation category for Status 3 species is "High". The mitigation objective for this resource category is to realize "no net loss of habitat function within the biological community which encompasses the project site". Under these guidelines, it will be important that the project be conducted in a manner that either avoids the impact, enhances similar habitat or results in the creation of an equal amount of similarly valued fishery habitat.

NSS4-7 - Populations are widely distributed throughout native range and are stable or expanding. Habitats are also stable. There is no special concern for these species.

WGFD Native Species Status Codes - Birds and Mammals

NSS1 - Populations are greatly restricted or declining, extirpation appears possible. On-going significant loss of habitat.

NSS2 - Populations are declining, extirpation appears possible; habitat is restricted or vulnerable but no recent or on-going significant loss; species may be sensitive to human disturbance. OR Populations are declining or restricted in numbers and/or distribution, extirpation is not imminent; ongoing significant loss of habitat.

NSS3 - Populations are greatly restricted or declining, extirpation appears possible; habitat is not restricted, vulnerable but no loss; species is not sensitive to human disturbance. OR Populations are declining or restricted in numbers and/or distribution, extirpation is not imminent; habitat is restricted or vulnerable but no recent or on-going significant loss; species may be sensitive to human disturbance. OR Species is widely distributed; population status or trends are unknown but are suspected to be stable; on-going significant loss of habitat.

NSS4 - Populations are declining or restricted in numbers and/or distribution, extirpation is not imminent; habitat is not restricted, vulnerable but no loss; species is not sensitive to human disturbance. OR Species is widely distributed, population status or trends are unknown but are suspected to be stable; habitat is restricted or vulnerable but no recent or on-going significant loss; species may be sensitive to human disturbance.

NSS5 - Populations are declining or restricted in numbers and/or distribution, extirpation is not imminent; habitat is stable and not restricted. OR Species is widely distributed, population status or trends are unknown but are suspected to be stable; habitat is not restricted, vulnerable but no loss; species is not sensitive to human disturbance.

NSS6 - Species is widely distributed, population status or trends are unknown but are suspected to be stable; habitat is stable and not restricted.

NSS7 - Populations are stable or increasing and not restricted in numbers and/or distribution; habitat is stable and not restricted.

3.7.10.1 Mammals

Six sensitive mammal species may potentially be found on or near the PPPA. These include: Wyoming pocket gopher, white-tailed prairie dog, swift fox, fringed myotis, long-eared myotis, and Townsend's big-eared bat. A search of the WOS only listed the white-tailed prairie dog and swift fox as being observed within the analysis area (WGFD 2006). The remaining species: Wyoming pocket gopher, fringed myotis, long-eared myotis, and Townsend's big-eared bat have a slight potential to occur on or adjacent to the PPPA.

White-Tailed Prairie Dog

White-tailed prairie dogs in WY occur generally at elevation ranges of 4,265 feet to 7,546 feet and require deep, well drained soils for development of burrows. White-tailed prairie dogs have been documented within the PPPA; two colonies (15.5 acres) occur within the PPPA.

Swift Fox

The swift fox inhabits arid short-grass prairie that consists of level to gently rolling topography and sparse vegetation. In addition, this fox species is also known to be present in agricultural habitats. The swift fox will use multiple den sites year-round for shelter, rearing young, and for protection from predators. The open, mixed grass prairie, and agricultural habitat found in the PPPA could support the occasional swift fox.

3.7.10.2 Birds

Nineteen sensitive bird species may potentially be found on or near the PPPA. These include: Baird's sparrow, Brewer's sparrow, chestnut-collared longspur, Columbian sharp-tailed grouse, ferruginous hawk, golden eagle, greater sage-grouse, loggerhead shrike, long-billed curlew, mountain plover, northern goshawk, peregrine falcon, sage sparrow, sage thrasher, sandhill crane, short-eared owl, trumpeter swan, western burrowing owl, and white-faced ibis.

Three species: peregrine falcon, trumpeter swan, and white-faced ibis have a slight potential to occur on or near the PPPA (WYNDD 2006). Two species, the yellow-billed cuckoo and northern goshawk, are unlikely to occur on or near the PPPA due to lack of suitable habitat.

Fourteen of the nineteen sensitive bird species listed in **Table 3-7** are known to be present or are likely to occur in the area of the PPPA and include: Baird's sparrow, sage sparrow, sage thrasher, short-eared owl, Columbian sharp-tailed grouse, sandhill crane, mountain plover, and chestnut-collared longspur. The following bird species were detected during field surveys conducted within the analysis area during the summer of 2006: ferruginous hawk, golden eagle, greater sage-grouse, loggerhead shrike, long-billed curlew, and western burrowing owl. Information on these species is provided below.

Ferruginous Hawk

The ferruginous hawk is closely associated with grasslands and semi-desert shrublands. This hawk uses isolated trees, rock outcrops, the ground, and structures such as windmills and power poles for nesting, and feeds primarily on small mammals (Cervoski et al. 2004). Six ferruginous hawk nests are located within one mile of the PPPA. Nests are found on rocky outcrops adjacent to the PPPA and also on mounds in open desert shrub communities (see **Figure 3-6**).



Figure 3-6
Ferruginous hawk nest located
just north of Sinclair, WY.

Golden Eagle

The golden eagle occupies most habitats with open areas for foraging in WY and one nest is located within one mile of the PPPA.

Greater Sage Grouse

See Section 3.7.7.1

Loggerhead Shrike

Suitable habitat for the loggerhead shrike within the PPPA includes sagebrush and desert shrub communities intermixed with short grasses and bare ground. The loggerhead shrike was observed within Sand Creek Canyon and suitable habitat for the shrike is found throughout the PPPA.

Long-Billed Curlew

The long-billed curlew can be found in sagebrush-grasslands, great basin foothills, and wet-moist meadow grasslands and nests on the ground near water (Cervoski et al. 2004). Several long-billed curlews were observed in open sagebrush-grassland habitat just north of Pathfinder National Wildlife Refuge in the central portion of the PPPA.

Mountain Plover Habitat

The mountain plover is associated with shortgrass and shrub-steppe habitat types throughout its breeding and wintering range. Suitable habitat is typically characterized by low, sparse vegetation, bare ground, and prairie dog colonies (USFWS 2002). Mountain plovers generally arrive in WY to breed from the last week in March to around April 20th, with actual breeding/nesting beginning around April 20th. These dates may vary depending on climatic conditions.

Approximately 96.2 acres north of Sinclair has been mapped as potential mountain plover habitat (see **Figure 3-5**). This area contains low, sparse vegetation, bare ground, and is generally considered good to excellent habitat for mountain plovers. Designation of potential mountain plover habitat was based on field surveys and conversations with BLM biologists. No plovers were observed within the PPPA during the summer of 2006; however, field work conducted in and around suitable habitat occurred just outside the peak time (April through July) for observing plovers in breeding habitat.

Western Burrowing Owl

The burrowing owl is a migratory species found in habitat that supports prairie dogs. These owls are only present in WY from approximately April through October (McDonald et al. 2004). In the winter months, the owl migrates from WY to Mexico and Central America. This small, ground dwelling bird is predominantly found in sagebrush and grassland habitats, typically in or near prairie dog towns. The owl utilizes prairie dog burrows for nesting, roosting, and protection from predators. Several burrowing owls were observed roosting on white-tailed prairie dog burrows located within sagebrush habitat in the central portion of the PPPA (see **Figure 3-5**). In addition, two burrowing owl nests are located within one mile of the PPPA.

3.7.10.3 Amphibians

Three sensitive amphibian species may potentially be found on or near the PPPA. These include: boreal toad, Great Basin spadefoot toad, and northern leopard frog. The Great Basin spadefoot toad has a slight potential to occur in the PPPA. The boreal toad is unlikely to occur due to lack of suitable habitat in the PPPA. The northern leopard frog was detected in field surveys conducted during the summer of 2006.

Northern Leopard Frog

The northern leopard frog inhabits wet meadows and the shallows of marshes, ponds, lakes, reservoirs, streams, and irrigation ditches up to 9,000 feet in elevation. Breeding habitat typically is found in shallow, quiet areas of permanent bodies of water, and in seasonally flooded areas adjacent to or contiguous with permanent pools or streams (Cervoski et al. 2004). Northern leopard frogs were detected in pockets of shallow open water associated with a grazed sedge (*Carex sp*) wetland area (see **Figure 3-5** for approximate location and **Figure 3-7** for photograph).



Figure 3-7
Occupied northern leopard frog habitat within the PPPA

3.7.10.4 Reptiles

One sensitive reptile species, the northern plateau lizard is likely to occur within the PPPA.

3.7.10.5 Fish

No sensitive fish species are likely to occur in the PPPA.

3.8 WATER RESOURCES

3.8.1 Surface Water

The proposed pipeline ROW crosses two major watershed basins: the North Platte (with four associated sub-watersheds) and the Great Divide Closed Basin. Sub-watersheds of the North Platte within the PPPA include (from north to south): the Middle North Platte-Casper, Sweetwater, Pathfinder-Seminole Reservoirs, and the Upper North Platte Basin.

The North Platte Basin is the most densely populated in WY and numerous irrigation canals associated with agricultural operations are located within the northern portion of the PPPA (just south of Casper). The pipeline ROW also crosses the Great Divide Basin, which is a closed basin and has no hydrologic outlet. **Figure 3-13** shows the boundaries of major basins and **Figure 3-14** shows surface water features within the PPPA. Representative photographs of streams and drainages within the PPPA are shown in **Figures 3-8 through 3-12**.

The majority of drainage features (intermittent and perennial streams) occur within the North Platte River Basin. The pipeline ROW crosses approximately nine perennial streams, 27 intermittent/ephemeral drainages, three artificial paths, and 11 canals/ditches in the North Platte River Basin and associated sub-watersheds. Spring-fed playa lakes in Natrona County are also found adjacent to the PPPA near Streamboat Lakes (Pathfinder National Wildlife Refuge). In addition, the pipeline ROW crosses 21 intermittent / ephemeral drainages in the Great Divide Closed Basin (see **Table 3-8** for an inventory of stream crossings within the PPPA). Drainage features in the Great Divide Basin primarily flow seasonally in response to localized storm events.



Figure 3-8
Poison Spring Creek- note alkaline soils



**Figure 3-9
Fish Creek**



**Figure 3-10
Horse Creek and adjacent wetlands dominated
by Nebraska sedge**



Figure 3-11
Sweetwater River crossing –
Sweetwater Arm of Pathfinder Reservoir



Figure 3-12
Turkey Creek (Sand Creek Canyon)

3.8.2 Flood Prone Areas

Areas adjacent to perennial streams, intermittent, and ephemeral drainages (dry washes) within the PPPA may be subject to periodic flooding. Larger floodplains associated with perennial streams within the PPPA include (from north to south): Poison Spider Creek, Fish Creek, Horse Creek, Sand Creek, Turkey Creek, and Sugar Creek (see **Figure 3-14** for location). Three additional unnamed perennial streams are also located within the PPPA. The pipeline ROW also crosses the Sweetwater Arm of the Pathfinder Reservoir. This area is currently not inundated due to lower reservoir levels and the Sweetwater River (currently flowing within a channel) is the largest perennial stream within the PPPA. Additional flooding along intermittent or ephemeral drainages (especially in the Great Divide Basin) would primarily result in response to high-intensity, localized storm events.

3.8.3 Groundwater

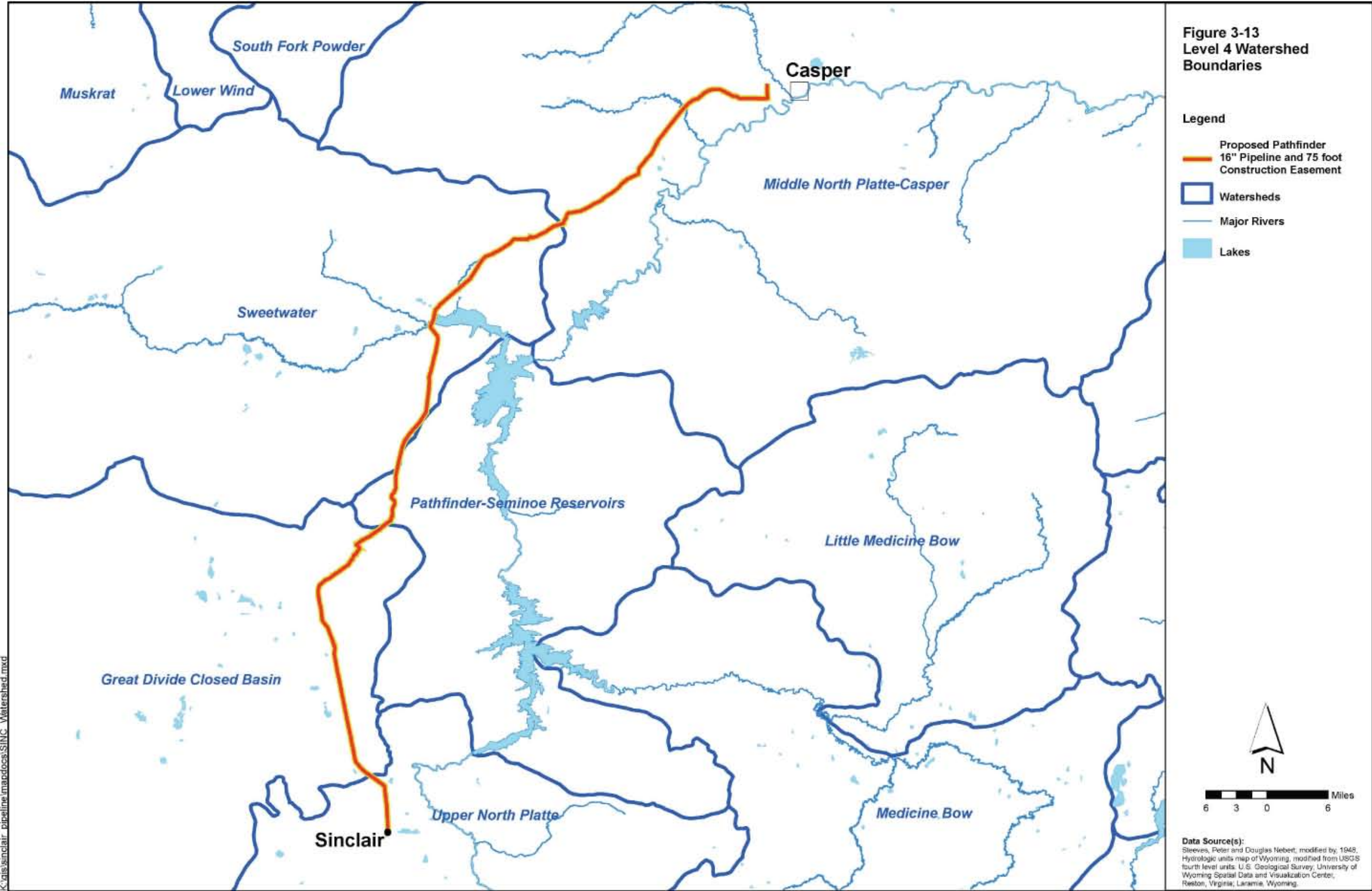
Groundwater resources include deep and shallow confined and unconfined aquifers. Deposits of alluvium, colluvium, terrace gravels, and pediment have been mapped along the PPPA (Case et al. 1998). These deposits, associated with drainages and uplands bordering streams, can contain local, unconfined aquifers that have a small aerial extent along streams. These resources can potentially produce enough water locally for livestock or domestic use (Bartos et al. 2006) and are the mostly likely groundwater resources that would be encountered during construction. Additional bedrock formations such as micocene rocks, Mesaverede, Frontier, Lance, White River, and Wind River Formations located within the pipeline ROW (USGS 1994) may also yield adequate water at a much greater depth.

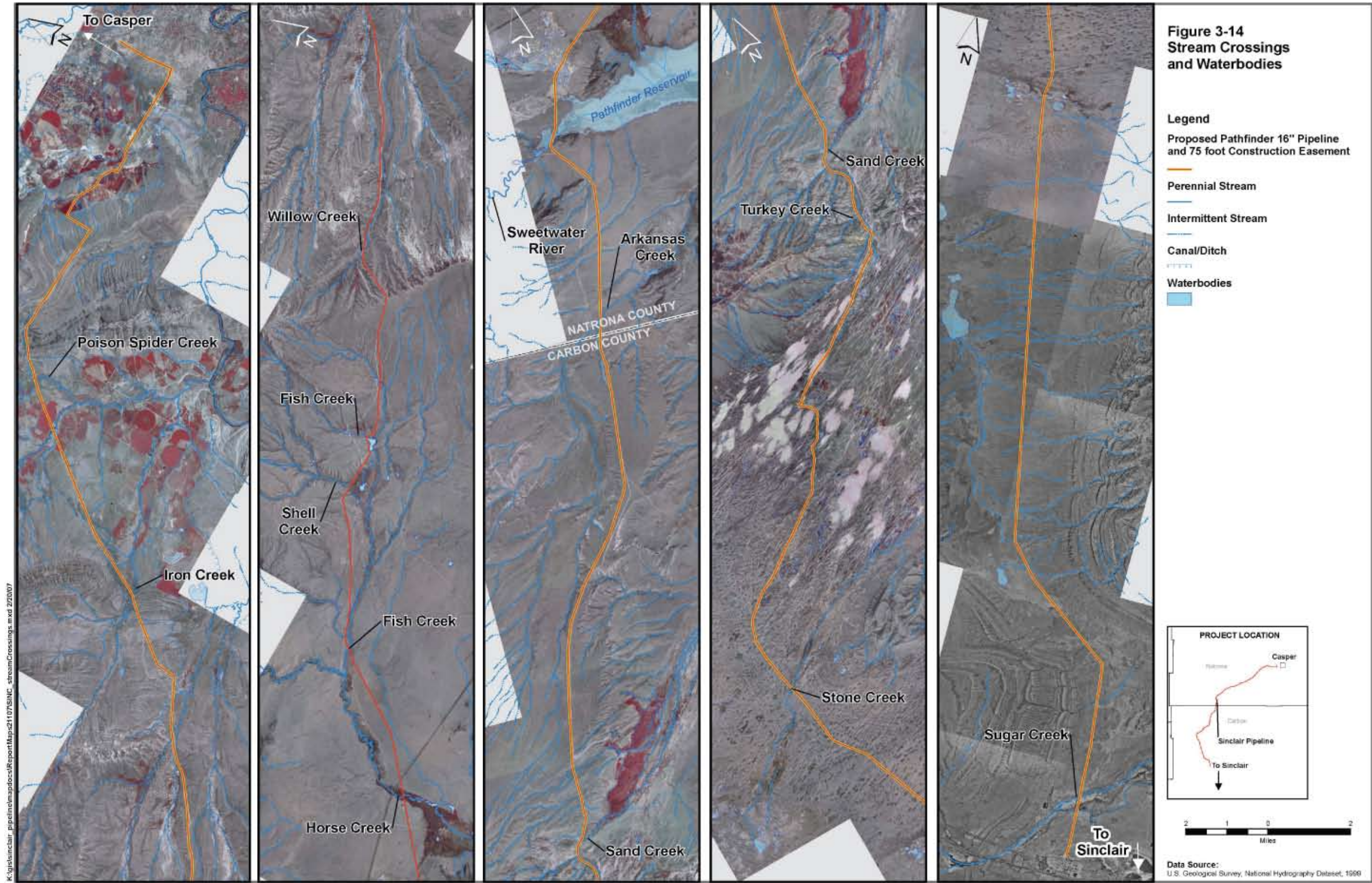
Table 3-8
Streams and Drainages Crossed by the Pipeline ROW

Crossings- from North (Casper) to South (Sinclair) along the Pipeline ROW	Perennial Stream Crossings	Ephemeral/Intermittent Drainage Crossings	Canal/Ditch Crossings	Artificial Path ¹ Crossings
Unnamed Features North of Poison Spider Creek	-	5	6	-
Poison Spider Creek - Perennial				
Unnamed Features South of Poison Spider Creek	1	-	-	2
Unnamed Features North of Iron Creek	-	2	2	-
Iron Creek - Intermittent				
Unnamed Features South of Iron Creek	-	3	2	-
Willow Creek - Intermittent				
Unnamed Features South of Willow Creek	-	1	-	-

Crossings- from North (Casper) to South (Sinclair) along the Pipeline ROW	Perennial Stream Crossings	Ephemeral/Intermittent Drainage Crossings	Canal/Ditch Crossings	Artificial Path ¹ Crossings
Fish Creek - Perennial (1 of 2)				
Shell Creek - Intermittent				
Unnamed Features North of Second Fish Creek Crossing	-	1	-	-
Fish Creek - Perennial (2 of 2)				
Horse Creek - Perennial				
Sweetwater River (Perennial). Sweetwater Arm of Pathfinder Reservoir (currently not inundated) but flowing in a channel				
Unnamed Features South of Sweetwater River	-	3	-	-
Unnamed Features North of Arkansas Creek	-	2	-	-
Arkansas Creek - Intermittent				
Unnamed Features North of Sand Creek	-	4	1	-
Sand Creek - Perennial				
Three consecutive crossings within Sand Creek Canyon				
Unnamed Features South of Sand Creek	1	1	-	-
Turkey Creek - Perennial				
Unnamed Features South of Turkey Creek	1	1	-	-
Stone Creek - Intermittent (Great Divide Closed Basin)				
Unnamed Features South of Stone Creek in Great Divide Closed Basin	-	5	-	-
Unnamed Features North of Sugar Creek- 14 out of 15 crossings in Great Divide Closed Basin	-	15	-	-
Sugar Creek - Perennial				
Unnamed Feature South of Sugar Creek	-	-	1	-

¹An artificial path is an artificial transport path through an open water body that provides connectivity for stream networking. Examples include artificial lakes, ponds, and reservoirs (such as the Sweetwater Arm of Pathfinder Reservoir) located within the PPPA.





3.9 VEGETATION, WETLANDS, AND INVASIVE WEEDS

The pipeline ROW crosses a wide region of rolling plains interspersed with uplifts, draws, drainages, alkaline flats, and active and vegetated sand dunes. Variations in soil characteristics and precipitation are the primary factors that control plant species distribution, composition, cover, and annual productivity along the pipeline ROW. Observations during surveys conducted in the summer of 2006 noted a variety of poor conditions in Wyoming sagebrush, desert shrub, and sedge (*Carex sp*) wetland communities due to the recent drought. In addition, major construction activities have occurred along the existing pipeline ROW since 1920. Installation of pipeline across the 103 mile pipeline ROW occurred in 1949, 1974, and between 1978 and 1994. As a result, existing shrub cover along the pipeline ROW varies in terms of density and in some locations a visible scar vegetated with forbs and grasses is apparent when viewing the surrounding landscape.

Elevations along the pipeline ROW generally range from 5,300 feet at Casper to 6,900 feet near Sand Creek Canyon then dropping slightly down to 6,500 feet just north of Sinclair. Vegetation along the pipeline ROW is dominated by Wyoming big sagebrush, saltbush, active and vegetated dunes, grassland riparian, irrigated crops just south of Casper, and mixed-grass prairie (see **Figure 3-16**). A variety of secondary cover types are also associated with these communities and will be discussed below. Vegetation cover types for the PPPA were obtained from the WY-GAP (See **Figure 3-16**). This data has been used to delineate vegetation cover type boundaries and calculate acreages and percentages of primary and secondary cover types (see **Table-3-19** for acreages).

3.9.1 Wyoming Big Sagebrush

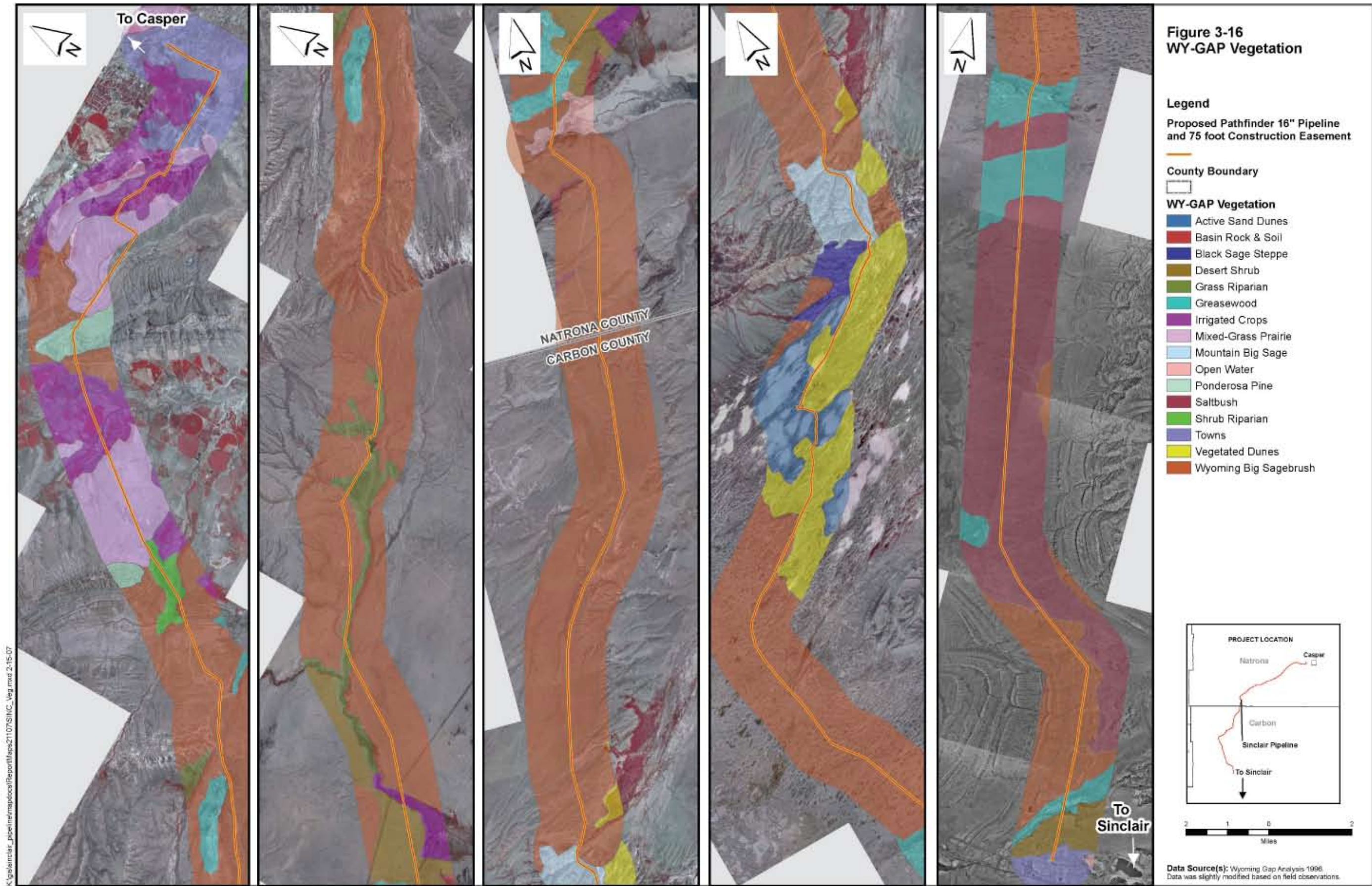
The Wyoming big sagebrush (*Artemisia tridentata* subsp. *wyomingensis*) cover type is the most abundant within the pipeline ROW and is typically found at elevations below 7,000 feet. In addition to being the shortest of all subspecies of big sagebrush, it also occupies the most xeric sites on soils that are well drained. This abundant cover type is variable along the pipeline ROW in terms of density and canopy cover. Observations during field surveys conducted in the summer of 2006 noted areas of dense, homogenous sagebrush to sparsely vegetated areas with a higher percentage of bare ground and grasses. The variable amount of bare ground observed can be primarily attributed to variations in precipitation (drought), associated or understory species, and soil properties (Welch and Criddle 2003). Additional factors include previous disturbance along the existing ROW, and grazing history. Secondary cover types associated with this community include: mixed grass-prairie, irrigated crops, desert shrub, and vegetated dunes. Percentages of secondary cover types range from 10 to 40 percent (see **Table 3-19**).

Common grass species associated with Wyoming big sagebrush include: western wheat grass (*Pascopyrum smithii*), thickspike wheatgrass (*Elymus macrourus*), needle-and-thread (*Hesperostipa comata*), bottlebrush squirreltail (*Elymus elymoides*), and Indian ricegrass (*Achnatherum hymenoides*). The shrub understory of Wyoming big sagebrush generally includes rabbitbrushes (*Chrysothamnus spp.*), winterfat (*Krascheninnikovia lanata*), prickly-pear cactus (*Opuntia polyacantha*), and broom snakeweed (*Gutierrezia*

sarothrae). Because Wyoming big sagebrush occupies the most xeric sites, forbs species are limited but common species include: Hood’s phlox, (*Phlox hoodii*), Hooker sandwort (*Arenaria hookeri*), low buckwheat (*Eriogonoum ovalifolim*), spring parsley (*Cymoptera acaulis*), locoweeds (*Oxytropis sp.*), goldenweeds (*Happlopappus sp.*), hollyleaf clover (*Trifolium gymnocarpum*), wild onion (*Allium sp.*), and beardtongue (*Penstemon sp.*).



Figure 3-15
Wyoming big sagebrush habitat in the central portion of the PPPA.
Note visible scar from previous construction
activities along the pipeline ROW.



3.9.2 Saltbush, Desert Shrub, and Greasewood

Gardner's saltbush (*Atriplex gardneri*) is the dominant shrub in the saltbush and desert shrub cover types and surface cover is variable depending on available moisture and climatic conditions. The highest amount of bare ground observed in desert shrub and saltbush communities was located just north of Sinclair along the pipeline ROW where bare ground commonly exceeded 40 percent of the total surface cover. Associated species occurring in saltbush and desert shrub cover type includes: greasewood (*Sarcobatus vermiculatus*), winterfat, galleta (*Hilaria jamesii*), alkali sacaton (*Sporobolus airoides*), Indian rice-grass, bottlebrush squirreltail, foxtail barley (*Hordeum jubatum*), basin wildrye (*Leymus cinereus*), and western wheatgrass.



Figure 3-17
Saltbush and desert shrub located within the
PPPA just north of Sinclair, WY.

Greasewood is tolerant of a wide range of conditions and is commonly found along Arkansas Flats located north of Sinclair and in the vicinity of Steamboat Lakes within the pipeline ROW where conditions are characterized by alkaline soils with a seasonally high water table. Several large areas of alkaline flats or spring-fed playa systems that are temporarily inundated, saturated, and receive sufficient hydrology, contain hydrophytic species, which include: inland salt grass (*Distichlis stricata*) alkali cord grass (*Spartina gracilis*), baltic rush (*Juncus balticus*), nuttall's alkaligrass (*Puccinellia nuttalliana*), seaside arrow grass (*Triglochin maritimum*), and lance-leaf golden weed (*Haploppaus lanceolatus*). These alkaline wetland areas are typically bordered by greasewood and saltbush on drier upland sites.



Figure 3-18
Alkali wetlands bordered by greasewood within Pathfinder
National Wildlife Refuge

3.9.3 Active and Vegetated Dunes

The pipeline ROW crosses the Killpecker Dune Field in northern Carbon County. Gently rolling dune habitat within the pipeline ROW is variable in terms of vegetative cover and consists of sparsely to densely vegetated dunes occurring at elevations of 6,600 to 6,900 feet. In general, unstable, windward slopes are characterized with vegetative cover less than five percent, while more stable lee slopes have vegetative cover ranging from 15-40 percent. Common species observed on vegetated slopes included: Indian ricegrass, lemon scurf-pea (*Psoralidum lanceolatum*), crested wheatgrass (*Agropyro cristatum*), thickspike wheatgrass (*Elymus lanceolatum*), and small intermixed patches of blowout grass (*Redfieldia flexuosa*). The dune features are typically bordered by vegetation primarily composed of silver sagebrush (*Artemisia cana*), which occupies well drained sandy soils.



Figure 3-19
Vegetated dune habitat within the PPPA dominated by lemon scurf-pea (existing pipeline is noted by above ground marker).



Figure 3-20
Vegetated dune habitat within the PPPA dominated by grasses and silver sagebrush.

3.9.4 Riparian

Grassland riparian/wetland habitat is the most common type of riparian community within the pipeline ROW, most commonly found along Horse Creek in the central portion of the PPPA. Additional areas are associated with intermittent and perennial streams in Natrona County and may contain wetlands if sufficient hydrology is present to support the development of hydrophytic vegetation and hydric soils. These areas generally lack a shrub component, and sedge species (*Carex sp.*) are heavily grazed by livestock. Nebraska sedge (*Carex nebrascensis*), reedtop (*Agrostis alba*), and baltic rush were the most common species observed. The majority of these sites have been disturbed by grazing. Secondary cover types include greasewood and irrigated crops. Secondary cover types of cottonwood habitat (mapped as shrub riparian) are limited, but several small scattered stands of cottonwoods are located along the pipeline ROW. The majority of cottonwood trees adjacent to the pipeline ROW are associated with agricultural developments located along irrigation canals just south of Casper.



Figure 3-21
Grassland riparian/wetland habitat located along Horse Creek.
This area is heavily grazed by cattle and poor conditions were
noted during the summer of 2006 due to the recent drought.

Sand Creek Canyon Riparian Habitat

Riparian habitat adjacent to Sand Creek is the most extensive riparian corridor within the PPPA. Vegetation is primarily composed of boxelder (*Acer negundo*), willows (*Salix sp.*), sedges (*Carex sp.*), rushes (*Jucus sp.*), and other herbaceous grass species. Riparian conditions on public lands along Sand Creek (within Sand Creek Canyon) have been evaluated by the BLM using a Proper Functioning Assessment Process. The primary

method used in evaluating this standard is through a qualitative assessment procedure called Proper Function Condition (PFC). A PFC assessment was performed for this segment of Sand Creek (though the canyon) in 1995. Riparian habitat along Sand Creek has been rated as “Functioning at Risk” with a downward trend. Substrate along Sand Creek is composed primarily of coarse sand with active and vegetated dune features located at the southeast end of the canyon. This system tends to be shallow and wide with little meandering due to bank loss, most likely due to grazing and wildlife use. Unstable dunes also contribute additional sand to this system. While riparian vegetation is present along the creek, shrub cover is not continuous. The lack of adequate root mass and vegetation on banks for stabilization contributes to excess bank erosion and channelization. These factors have contributed to the overall instability of the system prompting the “Functioning at Risk” rating for this area.

3.9.5 Mixed-Grass Prairie

Mixed-grass prairie is primarily located just south of Casper and is intermixed with irrigated farmland and small residential developments. Mixed grass prairie habitats generally consist of a variety of grass and forb species (native and introduced), which include: blue grama (*Bouteloua gracilis*), side-oats grama (*Bouteloua curtipendula*), buffalo grass (*Buchloe dactyloides*), barnyard grass (*Echinochloa crusgalli*), green foxtail (*Setaria viridis*), yellow foxtail (*Setaria pumila*), foxtail barley (*Hordeum jubatum*), smooth brome (*Bromopsis inermis*), crested wheat-grass (*Agropyron cristatum*), needle-and-thread, and western wheatgrass. In general, urban and agricultural developments in the PPPA have decreased the amount of mixed-grass prairie habitat. Secondary cover types include Wyoming big sagebrush and desert shrub.

3.9.6 Irrigated Crops and Towns

Irrigated crops and agricultural and residential developments are primarily found just south of Casper in Natrona County. Mixed-grass habitats in these locations have been converted to irrigated hay fields and pasture. Rural agricultural areas with rangelands and residential homes are also located south of Casper. These areas include commercial and industrial properties at the start of the pipeline ROW.

**Table 3-9
Vegetation Cover Types within the PPPA**

Primary Vegetation Cover Type	Primary		Secondary Vegetation Cover Type	Secondary	
	Acres	Percent		Acres	Percent
Wyoming Big Sagebrush	28.0	60	Desert Shrub	-	40
	4.0	60	Irrigated Crops	-	30
	15.0	60	Mixed-Grass Prairie	-	40
	43.0	70	Desert Shrub	-	30
	35.8	70	Mixed Grass Prairie	-	30
	30.5	80	Desert Shrub	-	20
	150.0	80	Mixed-Grass Prairie	-	20
	85.5	85	Vegetated Dunes	-	10
	72.0	90	Mixed-Grass Prairie	-	10
	26.0	100	-	-	-
Total	490.0 Acres				

Primary Vegetation Cover Type	Primary		Secondary Vegetation Cover Type	Secondary	
	Acres	Percent		Acres	Percent
Saltbush	2.0	60	Greasewood	-	40
	58.0	80	Desert Shrub	-	20
	41.0	90	Greasewood	-	-
Total	101.2 Acres				
Vegetated Dunes	56.3	60	Wyoming Big Sagebrush and Silver Sagebrush	-	30
Total	56.3 Acres				
Grassland Riparian	14.5	70	Greasewood	-	30
	21.0	70	Irrigated Crops	-	30
	13.5	80	Irrigated Crops	-	20
Total	49.0 Acres				
Irrigated Crops	2.5	80	Towns	-	20
	15.0	90	Forest Riparian	-	10
	23.0	90	Mixed-Grass Prairie	-	10
	3.0	90	Shrub Riparian	-	10
Total	43.5 Acres				
Mixed-Grass Prairie	9.0	60	Wyoming Big Sagebrush	-	40
	22.0	70	Desert Shrub	-	30
	10.0	70	Wyoming Big Sagebrush	-	30
Total	41.0 Acres				
Greasewood	10.5	60	Open Water	-	20
	18.0	80	Saltbush	-	20
	4.0	80	Shrub Riparian	-	20
Total	32.5 Acres				
Towns	2.0	50	Desert Shrub	-	40
	28.0	70	Mixed-Grass Prairie	-	30
	2.0	90	-	-	-
Total	32.0 Acres				
Desert Shrub	22.0	70	Wyoming Big Sagebrush	-	30
	9.0	85	Wyoming Big Sagebrush	-	15
Total	31.0 Acres				
Mountain Big Sagebrush	24.0	70	Black Sage Steppe	-	20
Total	24.0 Acres				
Active Sand Dunes	14.0	70	Vegetated Dunes	-	30
Total	14.0 Acres				
Ponderosa Pine	8.5	70	Wyoming Big Sagebrush	-	30
Total	8.5 Acres				
Open Water	2.5	100	-	-	-
Total	2.5 Acres				
Black Sage Steppe	0.5	60	Wyoming Big Sagebrush	-	30
Total	0.5 Acres				

3.9.7 Federal Threatened and Endangered Plant Species

Two federally listed plant species, the blowout penstemon (*Penstemon haydenii*) and Ute-ladies'-tresses orchid (*Spiranthes diluvialis*) are listed as potentially occurring on lands administered by the RFO and CFO (USFWS 2006). Both species have the potential to occur within the pipeline ROW in suitable habitat; however, field surveys conducted in 2006 did not detect the presence of blowout penstemon or Ute-ladies'-tresses orchid.

3.9.7.1 Blowout Penstemon

Blowout penstemon, a USFWS endangered species, is known to occur in sand dunes south of the Ferris Mountains in the northern portion of Carbon County. According to B. Heidel (2005), “*Penstemon haydenii* is restricted to sparsely vegetated, early successional shifting sand dunes with crater-like blowout depressions created by wind erosion. In WY, *Penstemon haydenii* is found primarily on the rim and lee slopes of blowouts, or the rim and steep faces of sandy slough slopes. The sand deposits are situated at the base of mountains or ridges, signifying topographic barriers to wind-born sand deposits. Occupied habitat spans elevations of 1,786-2,270 meters (5,860-7,440 feet).”

Known populations of *Penstemon haydenii* have been documented within 1.5 miles from the proposed pipeline (see **Figure 3-22**). In addition, the pipeline ROW crosses a relatively small portion (approximately 77 acres) of sand dune habitat in the northern part of Carbon County. The ROW in this area has been previously disturbed during installation of the previous pipelines. Due to the presence of sand dune habitat within the proposed PPPA, Parametrix Consulting conducted a survey on June 27, 2006 to determine the presence/absence of blowout penstemon (*Penstemon haydenii*). Timing of this survey coincided with the flowering period of blowout penstemon, which typically occurs in late June/early July (Fertig 2001). However, the 2006 flowering season peaked in early to mid-June, most likely in response to drier climatic conditions (Frank Blomquist Personal Communication). A 300 foot survey area from centerline of the proposed pipeline was used to detect the potential presence of blowout penstemon.

Blowout Penstemon Survey Results

The survey conducted on June 27, 2006 did not detect the presence of *Penstemon haydenii* at any location within the 300 foot survey area along the pipeline ROW. Plant species that are known to be associated with *Penstemon haydenii* (blowout grass, lemon scurf-pea, and thickspike wheatgrass) were observed within the survey area.

In contrast to occupied *Penstemon haydenii* habitat, vegetation cover within the survey area was dense (exceeding 40 percent in the larger dune areas) and blowout grass was only present in small scattered patches. Scurf-pea was the most common species observed and covered the largest dune area within the ROW. B. Heidel 2005 notes that lemon scurf-pea occurs throughout dune landscapes, but a more stabilized dune community is typically characterized by a high frequency of lemon scurf-pea (in association with blowout grass). These areas generally have little or no *Penstemon haydenii* present even though vegetation may be sparse (B.Heidel 2005). Based on field observations, dune habitat within the proposed pipeline ROW is marginal and no *Penstemon hadenii* were found within the 300 foot survey area.

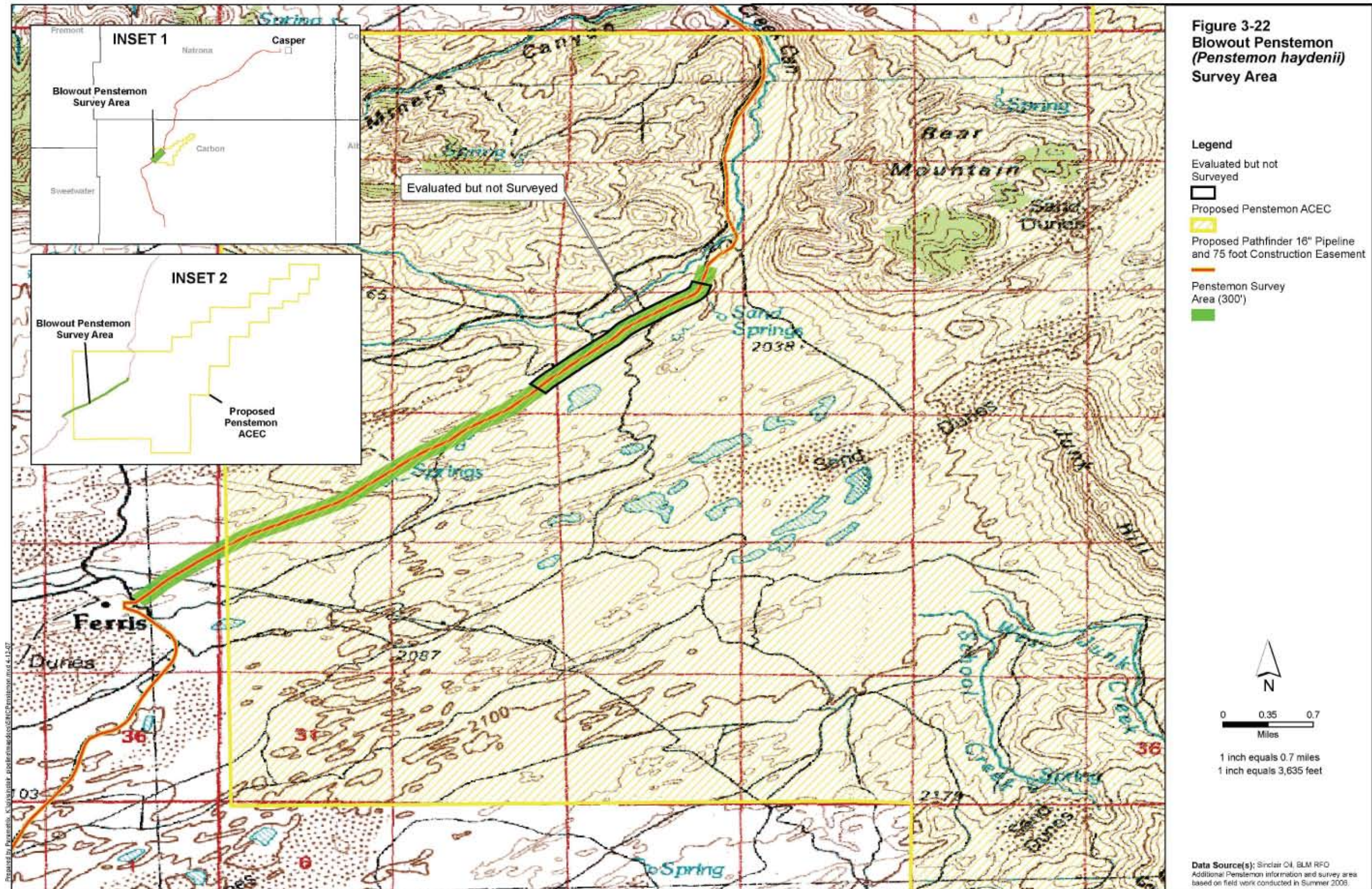
3.9.7.2 Ute Ladies'-Tresses Orchid

The Ute ladies'-tresses (*Spiranthes diluvialis*), a federally threatened species, is a perennial, terrestrial orchid, endemic to moist soils near wetland meadows, springs, lakes, and perennial streams. It occurs generally in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows at elevations from 4,200 to 7,000 feet

(USFWS 1992). The orchid colonizes early successional riparian habitats such as point bars, sand bars, and low lying gravelly, sandy, or cobbly edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. This species has been located in Converse, Goshen, Laramie, and Niobrara counties in WY (Fertig 2000a). Ute ladies'-tresses typically blooms from late July through August, however, it has been known to bloom in early July and as late as early October (USFWS 1992). Suitable habitat for the Ute ladies'-tresses is limited within the PPPA and surveys conducted in July 2006 were focused in and around Horse Creek, and other perennial and intermittent streams within the PPPA. This listed species was not detected during surveys conducted in July 2006. Potential Ute ladies'-tresses habitat present with the PPPA is considered marginal.

3.9.8 BLM Sensitive Plant Species

Eleven plant species have been designated as sensitive by the RFO and CFO (BLM 2002b). Sensitive plant species that may occur in the RFO and CFO management areas and information on sensitivity status, probability of occurrence in the PPPA, and descriptions of habitat types in which these special concern plants are found are listed in **Table 3-10**. Of these 11 species, the many-stemmed spider-flower (*Cleome multicaulis*) has been documented within the PPPA. Additional species that may potentially occur with the PPPA (based on suitable habitat) include: the persistent sepal yellowcress (*Rorippa calycina*); however, this species was not detected during surveys conducted in the summer of 2006.



3.9.8.1 Many-Stemmed Spider-Flower (*Cleome multicaulis*)

The many-stemmed spider-flower (*Cleome multicaulis*) is a sensitive plant species restricted to the Sweetwater River Valley in Natrona County in the State of Wyoming. This species was formerly a candidate for listing under the ESA. Suitable habitat for the spider-flower in WY includes whitish, alkali-rich, strongly hydrogen-sulfide scented soils bordering shallow, spring-fed playa lakes or dried lakebeds. Abundant populations are found on moist (but not flooded) flats bordering playa lakes dominated by inland salt grass, alkali cord grass, baltic rush, and Nevada bulrush (*Scirpus nevadensis*) (Fertig 2000b). The many-stemmed spider-flower was first confirmed in WY just north of Pathfinder Reservoir in 1980; however, this small population has not been relocated since its initial discovery in 1980. There has been speculation that this population was based on incorrect label data (Fertig 2000b). The second occurrence of the plant represents the single largest population in WY, which was discovered in 1992 along the Steamboat Lakes playa wetland complex (Fertig 2000b). Subsequent surveys conducted in 1999-2000 by WYNDD provide the most detailed information regarding the current distribution of the many-stemmed spider-flower around Steamboat Lakes. This survey estimated that approximately 500,000 to 1,000,000 individuals are distributed in a total area of about 200 acres within the Steamboat Lakes area (Fertig 2000b). Although the many-stemmed spider-flower is considered locally abundant at this site, the limited distribution and specialized habitat requirements warrant the sensitive status of this species (Fertig 2000b).

Many-Stemmed Spider-Flower Survey Results

Suitable habitat for the spider-flower within the PPPA is found adjacent to Steamboat Lakes, where the pipeline ROW crosses a complex of alkali wetlands that border these spring-fed playas. Due to the presence of suitable habitat for the many-stemmed spider-flower, and documented occurrence in the vicinity of the PPPA, presence/absence surveys were conducted in July of 2006. This survey coincided with the flowering period, which has been documented from June 24 through August 22 (Fertig 2000b).

Surveys conducted along the ROW documented and mapped the presence of the many-stemmed spider-flower. Occupied habitat within the PPPA totals approximately 5.4 acres (see **Figure 3-23**) and additional species associated with the spider-flower within the PPPA include: alkali cord grass, baltic rush, nuttall's alkaligrass (*Puccinellia nuttalliana*), seaside arrow grass (*Triglochin maritimum*), and lance-leaf golden weed (*Haploppaus lanceolatus*). This survey and subsequent mapping occurred at the end of July when the majority of plants were observed in full bloom. In addition, an onsite meeting held on September 13, 2006 at Steamboat Lakes along the pipeline ROW also noted larger plants with flowers, though the majority of plants were going to seed. It should be noted that large plants were observed growing on disturbed soils (along an existing two-track) where maintenance activities for the existing pipelines had occurred in 2001. Demographic studies in Colorado indicate that maintenance of a seedbank is critical for the long-term survival of this species and influences the yearly abundance (cited in Fertig 2000b).

3.9.9 Species of Concern

An additional 11 plant species of concern in the State of Wyoming have been documented in lands adjacent to the PPPA (WYNDD 2006). These plant species of concern include: wild yellowcress (*Rorippa truncate*), Nevada needlegrass (*Achnatherum nevadense*), little-leaved Brickell (*Brickellia microphylla* var. *scabra*), erect cryptantha (*Cryptantha stricta*), bighead pygmycudweed (*Filago prolifera*), white larch-leaf beardtongue (*Penstemon laricifolius* ssp. *exilifolius*), Devil's Gate twinpod (*Physaria eburniflora*), Illinois pondweed (*Potamogeton illinoensis*), longleaf pondweed (*Potamogeton nodosus*), and dwarf wooly-heads (*Psilocarphus brevissimus*). Wild yellow cress has the highest potential to occur within the PPPA. However, this species was not located within the PPPA during surveys conducted in the summer of 2006.

3.9.10 Wetlands and Waters of the U.S.

Wetlands are created where inundation or saturation by surface or groundwater occurs at a sufficient frequency and duration to support, and under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands provide a variety of important functions such as floodwater storage/conveyance, maintenance of biodiversity, groundwater recharge/discharge, streambank stabilization, wildlife and fisheries habitat, nutrient/contaminant/sediment removal, and storm surge buffering.

The term “waters of the U.S.” generally includes all surface waters and their tributaries, impoundments, and wetlands. Waters of the U.S. other than wetlands, such as streams and intermittent drainages, are typically identified as having a defined bed and bank and an “ordinary high water mark” (OHWM).

The primary vehicle for wetland protection and regulation in the United States is Section 404 of the Federal Water Pollution Control Act (FWPCA) amendments of 1972 (PL 92-500) and subsequent amendments (also known as the Clean Water Act), which set the basic structure for regulating discharges of pollutants to waters of the United States. Section 404 of the CWA established a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Anyone dredging or filling in waters of the U.S. must request a permit from the USACE. The 1987 USACE Wetland Delineation Manual provides technical guidelines for identifying wetlands and distinguishing them from aquatic habitats and other non-wetlands. The purpose of this manual is to provide users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Act.



Table 3-10
Sensitive Plant Species with Potential to Occur on or near the PPPA

Common Name	Scientific Name	Habitat	Sensitivity Status ¹	Occurrence Potential	Field Office
Plants					
Laramie columbine	<i>Aquilegia laramiensis</i>	Crevice of granite boulder & cliffs	G2/S2	Unlikely	RFO CFO
Porter's sagebrush	<i>Artemisia porteri</i>	Sparsely vegetated badlands of ashy or tuffaceous mudstone & clay slopes 5,300-6,500'	G2/S2	Unlikely	CFO
Nelson's milkvetch	<i>Astragalus nelsonianus</i>	Alkaline clay flats, shale buffs and gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, & cushion plant communities at 5200-7600'	G2/S2	Possible	RFO CFO
Cedar rim thistle	<i>Cirsium aridum</i>	Barren, chalky hills, gravelly slopes, & fine textured, sandy-shale draws 6,700-7,200'	G2Q/S2	Unlikely	RFO
Many-stemmed spider-flower	<i>Cleome multicaulis</i>	Semi-moist, open saline banks of shallow ponds & lakes with baltic rush & bulrush, 5,900'	G2GS/S1	Confirmed Presence- Steamboat Lakes	RFO
Williams-wafer parsnip	<i>Cymopterus williamsii</i>	Open ridgetops & upper slopes with exposed limestone outcrops or rockslides 6,000-8,300'	G3/S3	Unlikely	CFO
Webers Scarlet-Gilia	<i>Ipomopsis aggregata ssp. Weberi</i>	Openings in coniferous forests & scrub oak woodlands 8,500-9,600'	G5T1T12Q/S1	Unlikely	RFO
Gibbens beardtongue	<i>Penstemon gibbensii</i>	Sparsely vegetated shale or sandy-clay slopes, 5,500-7,700'	G1/S1	Possible	RFO
Persistent sepal yellowcress	<i>Rorippa calycina</i>	Riverbanks & shorelines, usually on sandy soils near high-water line	G3/S2S3	Possible	RFO
Pale blue-eyed grass	<i>Sisyrinchium pallidum</i>	Wet meadows, stream banks, roadside ditches, & irrigated meadows 7,000-7,900'	G2G3/S2S3	Unlikely	RFO

Common Name	Scientific Name	Habitat	Sensitivity Status ¹	Occurrence Potential	Field Office
Laramie false sagebrush		Cushion plant communities on rocky limestone ridges & gentle slopes	G2/S2	Unlikely	RFO CFO

Sources: USDI-BLM (2002b), WYNDD (2006).

*Occurrence potential based upon presence of suitable habitat, known distribution, WYNDD records, and field surveys.

1 - Definition of status

G Global rank: Rank refers to the range-wide status of a species.

T Trinomial rank: Rank refers to the range-wide status of a subspecies or variety.

S State rank: Rank refers to the status of the taxon (species or subspecies) in Wyoming. State ranks differ from state to state.

1. Critically imperiled because of extreme rarity (often known from 5 or fewer extant occurrences or very few remaining individuals) or because some factor of a species' life history makes it vulnerable to extinction.
2. Imperiled because of rarity (often known from 6-20 occurrences) or because of factors demonstrably making a species vulnerable to extinction.
3. Rare or local throughout its range or found locally in a restricted range (usually known from 21-100 occurrences).
4. Apparently secure, although the species may be quite rare in parts of its range, especially at the periphery.
5. Demonstrably secure, although the species may be rare in parts of its range, especially at the periphery.

3.9.10.1 Wetland Resources

Wetland resources along the pipeline ROW were delineated during the summer of 2006 and this inventory provides the most detailed information in terms of extent and species composition of wetlands located within the pipeline ROW. The majority of wetlands are concentrated on the northern and central portions of the pipeline ROW in Natrona County. The southern end (south of Pathfinder National Wildlife Refuge) in Carbon County contains fewer hydrological sources (i.e. intermittent drainages, irrigated meadows, spring-fed playa systems, or livestock impoundments) that are typically associated with the formation of wetlands in arid environments. Delineated wetlands within the PPPA total approximately 11.4 acres. Alkaline wetlands are common along the pipeline ROW and are dominated by a variety of salt tolerant species including alkali cord grass, inland salt grass, seaside arrow grass, and baltic rush. Most sedge dominated wetlands are associated with livestock impoundments or occur adjacent to perennial streams (Horse Creek) and tend to be heavily grazed by cattle. Common species include Nebraska sedge, red top, and baltic rush.

3.9.11 Invasive Species

3.9.11.1 Noxious and Invasive Weeds

Noxious and invasive weeds specialize in colonizing disturbed ground and construction activities can create ideal conditions for weed colonization through ground disturbance and the removal of existing vegetation. The PPPA is vulnerable to invasion of noxious and invasive weed species such as spotted knapweed (*Centaurea maculosa* Lam.), Russian knapweed (*Centaurea repens* L.), musk thistle (*Carduus nutans*), whitetop (*Cardaria draba*), and invasive species such as, curlycup gumweed (*Grindelia*

squarrosa), annual goosefoot (*Chenopodium sp.*), Russian thistle (*Salsosa iberica*), and cheatgrass (*Bromus tectorum L.*). These invasive species are normally restricted to disturbed areas. Any newly disturbed surface associated with construction of the pipeline will be susceptible to noxious/invasive weed infestations. In addition, seeds can be transported along highways and roads by construction equipment and vehicles. **Table 3-11** shows the current designated noxious weed list in WY. This table also includes additional species designated in Natrona and Carbon Counties.

Table 3-11
Designated Noxious Weed Species in the State of Wyoming¹
and Declared Weeds in Natrona and Carbon Counties

Common Name	Scientific Name	State of Wyoming	Natrona County	Carbon County
Black henbane	<i>Hyoscyamus niger L.</i>		✓	
Buffalobur	<i>Solanum rostratum</i>		✓	
Canada thistle	<i>Cirsium arvense</i>	✓		
Common St. Johnswort	<i>Hypericum perforatum</i>	✓		
Common burdock	<i>Arctium minus</i>	✓		
Common tansy	<i>Tanacetum vulgare</i>	✓		
Curlycup gumweed	<i>Grindelia squarrosa</i>		✓	
Dalmatian toadflax	<i>Linaria dalmatica</i>	✓		
Diffuse knapweed	<i>Centaurea diffusa</i>	✓		
Dyers woad	<i>Isatis tinctoria</i>	✓		
Field bindweed	<i>Convolvulus arvensis</i>	✓		
Halogeton	<i>Halogeton glomeratus</i>	✓	✓	✓
Hoary cress, whitetop	<i>Cardaria draba, C. Pubescens</i>	✓		
Houndstongue	<i>Cynoglossum officinale</i>	✓		
Leafy spurge	<i>Euphorbia esula</i>	✓		
Mosquito	<i>Culicidae species</i>		✓	✓
Musk thistle	<i>Carduus nutans</i>	✓		
Ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	✓		
Perennial pepperweed	<i>Lepidium latifolium</i>	✓		
Perennial sowthistle	<i>Sonchus arvensis</i>	✓		
Plains larkspur	<i>Dephinium geyeri Green</i>	✓		✓
Plains pricklypear	<i>Opuntia polyacantha Haw.</i>	✓		✓
Plumeless thistle	<i>Carduus acanthoides</i>	✓		
Puncturevine	<i>Tribulus terrestris</i>		✓	
Purple loosestrife	<i>Lythrum salicaria</i>	✓		
Quackgrass	<i>Agropyron repens</i>	✓		
Russian knapweed	<i>Centaurea repens</i>	✓		
Salt cedar	<i>Tamarix sp</i>	✓		
Scotch thistle	<i>Onopordum acanthium</i>	✓		
Showy milkweed	<i>Asclepias speciosa</i>		✓	
Skeletonleaf bursage	<i>Ambrosia tomentosa</i>	✓		
Spotted knapweed	<i>Centaurea maculosa</i>	✓		
Wild licorice	<i>Glycyrrhiaz lepidota</i>		✓	

Common Name	Scientific Name	State of Wyoming	Natrona County	Carbon County
Wyeth Lupine	<i>Lupinus wyethii</i> S. Wats			✓
Yellow toadflax	<i>Linaria vulgaris</i>	✓		

¹Designated Noxious Weeds, Wyoming Stat. § 11-5-102 (a)(xi) and Prohibited Noxious Weeds, Wyoming Stat. § 11-12-104.

3.9.11.2 Current Extent of Weed Establishment

Weed invasion and establishment is present within the PPPA; however, the current extent of weed establishment is considered low based on field surveys conducted in the summer of 2006. The most common species observed included Canada thistle (*Cirsium arvense*) and halogeton (*Halogeton glomeratus*). In addition, salt cedar was observed near Sugar Creek in the southern portion of the PPPA (just north of Sinclair). Other invasive species observed within the PPPA include: cheat grass (*Bromus tectorum* L.) and curlycup gumweed (*Grindelia squarrosa*). **Table 3-12** details weed establishment with the PPPA.

Table 3-12
Noxious and Invasive Weeds within the PPPA

Scientific Name	Common Name	Location	Density
<i>Cirsium arvense</i>	Canada Thistle	Located along ephemeral and perennial streams: Poison Spider Creek, Turkey Creek, Sand Creek, and Sweetwater River. Large patches observed in upland areas adjacent to Sweetwater River.	Small scattered patches to large patches
<i>Halogeton glomeratus</i>	Halogeton	Located along ephemeral drainages and the pipeline ROW just north of Sinclair. Also located adjacent to dirt roads near Poison Spring Creek in Natrona County where soils were moderately to strongly alkaline (see Figure 3-24).	Small to large patches on disturbed areas
<i>Tamarix</i> spp.	Salt Cedar	Located just north of Sinclair near Sugar Creek in Carbon County.	A few scattered individuals

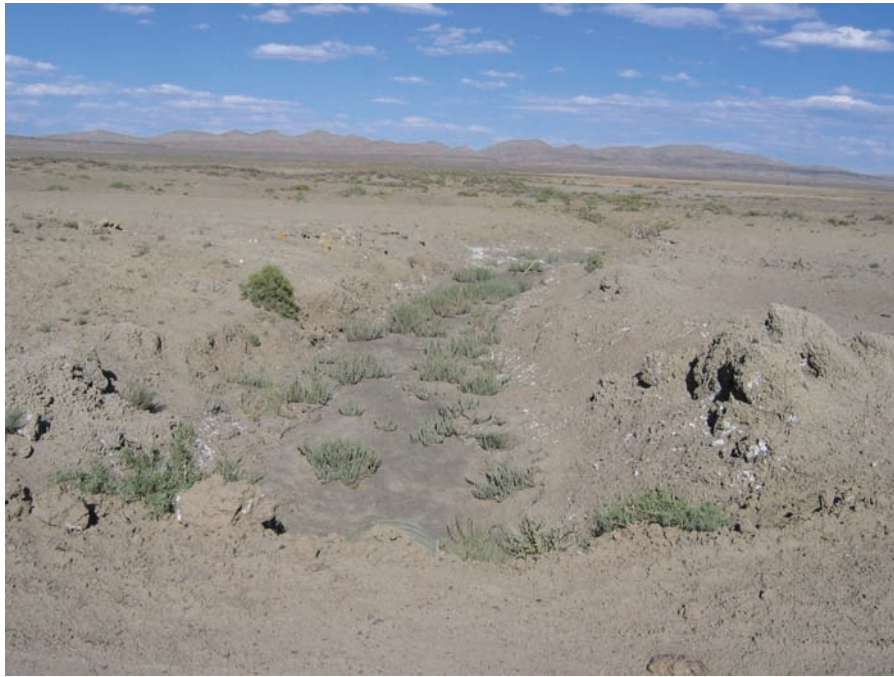


Figure 3-24
Halogeton observed north of Sinclair along ephemeral drainages in the Great Divide Basin where soils were moderately to strongly alkaline.

3.10 SPECIAL MANAGEMENT AREAS – AREAS OF CRITICAL ENVIRONMENTAL CONCERN

One proposed Area of Critical Environmental Concern (ACEC) is located within the PPPA. The BLM is currently proposing to designate sand dune habitat just southeast of the Ferris Mountains as an ACEC, which encompasses known populations of blowout penstemon and also contains active and vegetated sand dunes. The proposed ACEC boundary can be seen in **Figure 3-22**. The area is currently being proposed in the Draft Rawlins RMP (BLM 2004) and a decision will be made when the document is finalized.

3.11 VISUAL RESOURCES

The objective of BLM visual resource management is managing and protecting visual resource values in accordance with Section 102 (a) (8) of the Federal Land Policy and Management Act of 1976. The rating of visual resource values takes into consideration scenic qualities, sensitivity levels, and a delineation of distance zones. Most of the PPPA is located within a BLM visual resource management (VRM) Class III area that is managed to partially retain the existing character of the landscape. Management activities taking place in this class may modify the landscape, but should not dominate the view.

A short segment of the pipeline ROW crosses within one mile of the Ferris Mountain Range, which is designated a VRM Class I area (BLM 2004). The objective of VRM Class I is preserving the existing character of the landscape. The Ferris Mountain Range is a wilderness study area and is rated VRM Class I because of its scenic attributes. The portion of the pipeline ROW that crosses near the Ferris Mountain Range is located some distance from the base of the range, and is still located in a VRM Class III.

Another segment of the pipeline crosses near the Rattlesnake Hills, located within the jurisdiction of the CFO (BLM 2006). Portions of the Rattlesnake Hills are classified as VRM Class II due to their scenic qualities and higher visual sensitivity. The objective of Class II is to retain the existing character of the landscape. Management activities in the class can be visible, but should not attract attention from a casual observer.

The PPPA is characterized by varied natural settings, ranging from sand dunes to riparian corridors with diverse vegetation. While the green riparian corridors are easily noted by the casual observer, most of the vegetation in the PPPA is shrubby, low-growing and grey to light green in color. These natural settings are often open and create long distance views of mountain ranges such as the Ferris Mountains. While most of the setting is natural, intrusive activities are also visible and include oil and gas wells, an extensive road network, irrigation canals, and utility ROWs. The most noticeable oil and gas activity is seen at the Town of Ferris. Now an abandoned town, visitors can view old oil wells and structures from a former energy boom period.

3.12 RECREATION

Popular recreational activities commonly pursued on and near the PPPA include hunting, off-road vehicle use, rock collecting, photography, and camping. The PPPA has a good network of two-tracks that allow access to largely natural surroundings. There are no developed recreational sites or facilities within or adjacent to the PPPA. The fall hunting season attracts the majority of the recreational use. Big Game hunting commences in the fall with the opening of pronghorn hunting and concludes with the mule deer season in October. Small game such as greater sage-grouse and rabbits are also pursued during the fall.

Visitation outside of the designated hunting seasons would be considered light because of the remote location and lack of publicized natural attractions. However, uses such as off-road vehicle travel, rock collecting, photography, and some camping occur within the PPPA. The extensive network of two-tracks that cross the PPPA does allow visitors access to the fringes of the Ferris Mountain Wilderness Study Area.

A portion of the pipeline ROW crosses the Pathfinder National Wildlife Refuge, which is administered by the USFWS. This section of the ROW crosses the Sweetwater River Arm of Pathfinder Reservoir, an area of the reservoir that is not currently inundated. Recreation activities associated with this refuge include hunting, bird watching, and photography.

Based on BLM recreational rating classification, most of the PPPA would be considered Roaded Natural because of the extensive network of roads and two-tracks (BLM 2004).

This classification is consistent with the majority of lands administered by the BLM RFO and CFO.

3.13 CULTURAL AND HISTORICAL RESOURCES

Cultural resource sites discovered and dated in the Great Divide and Wind River Basins show the area has been inhabited by humans for at least 12,000 years. These sites range from the earliest Paleoindian to historic sites represented by trails and stage stations.

Prehistoric sites are represented from the Paleoindian (12,000 B.P. to 8500 B.P.), Archaic Period (7,500 B.P. to 1,500 B.P.), Late Prehistoric Period (1,500 B.P. to 1650 B.P.), and Protohistoric Period (Initiated around 1650 A.D. during the first contact between Native Americans and Euro-Americans). Archaeological sites from these periods represent the largest number of cultural resource sites potentially located in the PPPA.

Historic sites represent the early trails used by settlers to reach the western United States, stage and freight roads, stage stations, irrigation ditches, railroads, and other sites that were important to the early settlers in the region. A segment of the Oregon Trail is located within the PPPA. This historic trail was used extensively by pioneers to reach the West Coast.

Several of the sites identified in the PPPA are eligible for potential listing in the National Register of Historic Places (NRHP) because of their association with important events and people in our nation's history. Cultural resource properties may be considered eligible for listing on the NRHP if they meet one or more of the following criteria:

- A historic property is associated with an event or events that have made a significant contribution to the broad patterns of America's history.
- A historic property is associated with the lives of persons significant to our past.
- A historic property embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction.
- A historic property has yielded or may likely yield information important in prehistory or history.

A determination of a site's significance and formal listing is determined by the BLM in consultation with the WY SHPO.

3.13.1 Cultural Resource Inventory Results

Western Archaeological Services, Inc. conducted a Class III cultural resource inventory for the entire PPPA. The inventory resulted in the location of 25 sites, and included 14 prehistoric sites and 11 historic sites. **Table 3-13** identifies the prehistoric and historic sites documented in the Class III inventory and their NRHP status.

Table 3-13
Prehistoric and Historic Sites in the PPPA

Site Number	Site Type	National Register of Historic Place Status
48CR310	Prehistoric Open Camp	Eligible
48CR320	Prehistoric Open Camp	Eligible
48CR330	Prehistoric Lithic Scatter	Not Eligible
48CR332	Prehistoric Open Camp	Eligible
48CR656, 6937/6938	Prehistoric Open Camp	Eligible
48CR3439	Ferris Town Site	Not Eligible
48CR3438	Ferris Dump	Not Eligible
48CR4024	Prehistoric Open Camp	Not Eligible
48CR4057/48NA3786	Historic Rawlins to Sand Creek/Fort McKinney Rd.	Not Eligible
48CR6935	Prehistoric Open Camp	Eligible
48CR7264	Historic Power Line	Not Eligible
48CR8708	Prehistoric Open Camp	Eligible
48NA94	Prehistoric Open Camp, Stone Rings	Not Eligible
48NA207/48NA4218	Bridger Trail/Casper to Lander Freight Trail	Eligible
48NA208	Emigrant Gap Historic Site	Eligible
48NA214	Willow Springs, Prospect Hill Historic District	Eligible
48NA293	Oregon Trail	Eligible
48NA712	Prehistoric Open camp, Stone Rings	Eligible
48NA712	Prehistoric Open Camp	Eligible
48NA1293	Casper Canal	Eligible
48NA2780	Historic Trail	Not Eligible
48NA3052	Historic Alcova-Copper Mt. Power Line	Not Eligible
48NA4346	Prehistoric Open Camp	Not Eligible
48NA4347	Prehistoric Open Camp	Not Eligible
48NA4348	Prehistoric Lithic Scatter	Not Eligible

Oregon Trail Analysis

In the summer of 2006, Western Archaeological Services, Inc. conducted a historic assessment of a segment of the Oregon Trail located within and adjacent to the PPPA. This segment of the Oregon Trail begins at the Sweetwater Stage Station, ending at a point near Casper. Within the PPPA, the Oregon Trail is primarily located along County Road 319, also known as the Oregon Trail Road. The entire Oregon Trail is eligible for the NRHP. A historic assessment conducted by Western Archaeological Services, Inc. identified contributing (29 miles) and non-contributing segments (34 miles) of the Oregon Trail in the PPPA. Contributing segments of the Oregon Trail were identified because it adds to the historical association and qualities of a trail that is nationally significant and eligible for the NRHP. Non-contributing segments of the trail were

identified based on the presence of disturbances or changes to the trail, so that it no longer possesses a high degree of historic integrity.

3.14 SOCIOECONOMICS

Socioeconomic data for Carbon and Natrona Counties was used for an overview of economic and population conditions in the PPPA. Most of the economic and population base is located in the larger communities present in these counties.

3.14.1 Economic Conditions

The economy of Carbon County is based on natural resources. Basic economic sectors that create revenue in the county include: oil and gas extraction and processing, coal mining, electric power generation, agriculture (primarily ranching and logging), light manufacturing, and transportation (primarily the Union Pacific Railroad). Additionally, retail and service sector industries support these basic economic sectors and also tourism based on recreation.

Employment, like the overall economy, has followed a boom and bust cycle. In 2002, employment in Carbon County totaled 12,392 full- and part-time jobs, which was about 25 percent higher than the 1990 level (Wyoming Department of Administration and Information [WDAI] 2000, WDAI 2003) and about nine percent lower than the 1980 level of 13,350 jobs.

Natrona County is similar to Carbon County, as the economy is based primarily on natural resources. Important economic sectors in the county include: agriculture (primarily ranching), mining, and oil/gas extraction and processing. Diversification of the economy is occurring and includes manufacturing, retail, media/communications, and education (Casper College). Much of the growth in retail and manufacturing is occurring as a result of the healthy mining and oil/natural gas extraction and processing industries.

Employment in Natrona County was estimated at 35,900 jobs in 2005 (Wyoming Department of Employment [WDOE] 2005), which would represent a 7.2 percent increase over the 2002 estimate of 33,500 jobs (BLM 2003b). Unemployment in Natrona County is 3.3 percent versus 3.8 percent for the State of Wyoming (WDOE 2005).

3.14.2 Population

The growth and decline in the population of Carbon County parallel the economic boom and bust cycle outlined at the beginning of this section. For example, the 2000 population of Carbon County (15,639) was 29 percent lower than its 1980 population level of 21,896 (WDAI 2001). This population loss is attributed to the bust of the energy industry during the 1980's. Also following this trend, the City of Rawlins, the largest community in Carbon County, lost an estimated 842 persons to end the period at 8,538 residents (**Table 3-14**). However, the City is currently adding additional residents as the energy industry is booming. **Table 3-14** identifies the largest population centers in Carbon County.

Table 3-14
Carbon County Population Centers

City	Population		
	1990	2000	% Change
Rawlins	9,380	8,538	-9.0
Saratoga	1,969	1,726	-12

Natrona County had an estimated population of 69,010 residents in 2004 (U.S. Bureau of Census 2005). This population estimate reflected an increase of 3.7 percent over the 2000 population. The largest city in the county is Casper, with an estimated 2004 population of 51,240 residents, which accounts for 75 percent of the total Natrona County population.

3.15 TRANSPORTATION AND ACCESS

The Pathfinder Pipeline ROW can be reached from several access points running from north to south. Poison Spider Road in Casper provides access to the northern portion of the ROW. This road can be reached off State Highway 26/20 and generally travels southwest out of Casper. A series of gravel roads and unimproved two-tracks provides access to the pipeline ROW when the traveler leaves Poison Spider Road.

Further south, the pipeline can be accessed from State Highway 287/789 out of Rawlins at Buzzard Road and Ferris Road. Access from these locations allows the visitor access to the pipeline ROW; although it is through connection to a series of two-tracks that follow the pipeline.

At the southern terminus of the pipeline, the ROW can be accessed off Interstate 80 (I-80) at the Town of Sinclair. At the I-80 Sinclair exit, the pipeline can be accessed on Seminoe Road. The pipeline crosses Seminoe Road and must be accessed on a two-track that takes the visitor north along the ROW.

The primary access in the PPPA is through the use of unimproved roads and two-tracks. Conditions on these routes vary, and can be influenced by a number of factors including terrain, weather, and soil conditions. Soil conditions along unimproved dirt roads, especially in the sand dune locations, can be variable, resulting in difficult travel.

No new roads or improvements to existing roads are planned for the project. Sinclair has used the existing unimproved roads and two-track system for more than 30 years to access and maintain their existing pipelines in the ROW. They have determined the existing road and two-track system will be sufficient for access and installation of the new 16-inch pipeline.

3.16 HAZARDOUS MATERIALS

Petroleum products and hydraulic fluids will be stored at specified locations along the ROW and handled during the construction phase of the project. Hazardous materials associated with pipeline construction will be managed in accordance with the Sinclair Spill Prevention, Control, and Countermeasure Plan (SPCC) to prevent discharges to the

environment. This plan will be available to the construction contractors and Sinclair management personnel during the construction phase of the project. All of the bulk fuel and petroleum fluid storage locations will have secondary containment installed that will hold all of the bulk fluids plus an additional 10 percent if an accidental spill occurs. Additionally, no refueling of construction equipment will occur within 500 feet of live water.

The directional drill rig requires the use of slurry that provides lubrication to the cutting head and stabilizes the hole from collapse. Excess waste slurry will be contained in the drilling pit and surrounded by silt fence to prevent discharge to waterways. The directional drill rigs will be located close to waterways and will be required to adhere to all of the best management practices outlined in the stormwater management plan.

3.17 HEALTH AND SAFETY

The PPPA is located primarily in remote locations, thus reducing the risk to humans from construction activity. Activities associated with the pipeline installation that may result in some health and/or safety risk include increased vehicle traffic on unimproved roads and two-tracks, workers exposed to accidents from construction activities, and very slight risk from events such as landslides, flash floods, lightning, and range fires.

3.18 NOISE

The PPPA is located in a rural setting with very few activities creating noise levels above normal background levels. Noise levels will increase above background levels in the PPPA during construction for short periods of time. This noise level increase will be localized, occurring only where the construction crew is installing the pipeline. Other activities that would increase noise levels in the PPPA include vehicle traffic on highways, some minor energy development (drilling, compressor station), and farm vehicle (ranches, hay operations).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter evaluates the environmental consequences that may result from implementation of the Proposed Action. The purpose of this chapter is to analyze and disclose potential impacts of the Proposed Action on the human environment. A total of two alternatives (Preferred and No Action) will be analyzed to determine their affect on the human environment. Additional discussion on detailed and specific mitigation measures will also be outlined in this chapter. This discussion will target mitigation being proposed for complex issues, such as avoiding impacts to the Oregon Trail. The chapter also addresses cumulative impacts that may result from past, present, and reasonably foreseeable future activities within the PPPA. This discussion will target only those resources that may be impacted in the future by this Proposed Action and other activities that have occurred or may occur in the future.

An environmental consequence or impact is defined as a change or modification in the existing environmental conditions resulting from implementation of the Proposed Action. The term impact and effect will be synonymous when used in this chapter. Direct impacts result directly from the Proposed Action and generally occur at the time and place of the activity. For example, the action of pipeline installation results in surface disturbance and clearing of vegetation.

Indirect impacts are also caused by the action, but occur some distance or later in time from the action. An example of an indirect impact would be a heavy precipitation event causing erosion and sediment release on a recently constructed pipeline ROW days or weeks after it has been cleared. If this sediment reaches a stream, the impact on water quality is considered an indirect impact.

The short-term and long-term aspects of an impact are also discussed in this chapter. Short-term impacts normally occur during the construction phase of the project and may continue for a period of up to five years. Long-term impacts will be identified when they continue beyond five years after the completion of the project. Five years is considered the benchmark for successful reclamation of an area following surface disturbance.

4.2 AIR QUALITY

4.2.1 Alternative 1 – Proposed Action

Some temporary effects on air quality will likely occur in the immediate vicinity of the project construction activities, caused by particulate matter and exhaust from vehicles and construction equipment. These effects will be local in scale, and will be dispersed by prevailing winds. Temporary increases in dust will also occur during the construction phase of the project. The increase in dust will be the result of increased vehicle use of unimproved roads and two-tracks. This anticipated effect on air quality will occur for short periods of time within parts of the PPPA where construction activities are occurring. Increases in dust may be visible to visitors, and could cause some minor irritation to people if they are traveling through a segment of the PPPA where

construction activities are occurring. This type of impact will be small in scale, and should impact few visitors due to the remote location of the PPPA.

The project will not result in new emission sources for this geographic location in WY (Carbon and Natrona Counties). Installation of the block valves represent the only above ground facility required for this project. These facilities do not release any emissions to the air.

4.2.2 No Action Alternative

Under the No Action Alternative, the pipeline will not be installed. Therefore, no construction related impacts to air quality will occur.

4.3 GEOLOGY/PALEONTOLOGY

4.3.1 Alternative 1 – Proposed Action

Installation of the pipeline will result in the disturbance of 1,012 acres of existing topography in the PPPA. The installation of the pipeline could directly expose, damage, or destroy significant fossil resources. However, most of the pipeline will be installed at a depth of 3 to 6 feet, a shallow depth that should prevent impacts to sensitive formations containing fossils. If fossil resources are uncovered during construction, the mitigation measures discussed in Chapter 2 will protect these resources from damage.

No major landslides or other geologic hazards have been mapped within the PPPA. Following standard construction procedures should prevent activation of landslides, mudslides, debris flows, or slumps. Seismic activity is low in the area, so the potential risk for an earthquake to damage the pipeline is considered minimal.

4.3.2 No Action Alternative

Under the No Action Alternative, the pipeline will not be installed and no potential impacts to geologic or paleontological resources will occur.

4.4 SOILS

4.4.1 Alternative 1 – Proposed Action

Pipeline construction activities such as clearing and grading along the ROW, trenching, backfilling, and regrading the ROW following construction may affect soils and revegetation potential along the pipeline ROW by:

- Removing existing vegetation cover;
- Redistributing or removing all or part of the topsoil profile, especially mixing this profile with higher salinity subsoils;
- Compacting soils;
- Decreasing topsoil productivity;
- Exposing soil to accelerated wind and water erosion;

- Potentially covering adjacent soils and drainages with sediments; and
- Exposing soil to weed invasion.

Project activities will occur for approximately 3 to 4 months and reduction of soil productivity will occur within and immediately adjacent to the proposed construction easement associated with the pipeline ROW. Soil productivity will be impacted due to:

- Reduced soil microbial activity and soil fertility;
- Interruption of soil nutrient and organic matter from vegetation;
- Impaired water infiltration from soil compaction; and
- Top soil loss.

The effects of these activities on soil productivity have been evaluated based on their duration and intensity. As described in Section 3.5 and displayed in **Figure 3-1**, the majority of soils present in the PPPA are highly susceptible to water erosion, and areas with sandy textures, which includes vegetated dunes, are extremely susceptible to wind erosion. In addition, soils in the southern portion of the PPPA are also moderately to strongly alkaline.

The majority of effects on soil productivity will occur in the short-term (five years or less) affecting approximately 1,012 acres across the 103 mile ROW that has been previously disturbed. In addition, approximately 0.012 acres or 522.7 square feet of soils will be permanently impacted by expanding 11 existing block valves by approximately 20 feet. These block valves are located across the 103 mile pipeline ROW.

Impacts beyond five years will be dependent on the success of mitigation and reclamation efforts. The intensity of these effects will vary according to the location of disturbance, use of mitigation measures, and reclamation success once construction is complete. Areas with high salinity, vegetated dunes, steep slopes, and low moisture availability will be difficult to successfully reclaim and impacts may occur beyond five years despite the relatively short duration of construction. These areas will require additional efforts to achieve adequate reclamation.

Following construction, disturbed areas will be reclaimed to BLM standards and regrading will be used to blend the disturbed area into the surrounding topography. Regraded areas and redistributed soil will be scarified to alleviate compaction and prepare for the soil for seeding. Measures to control erosion, runoff, and sedimentation during construction are described in Chapter 2.

4.4.2 No Action Alternative

Under the No Action Alternative, no impacts to soil will occur from installation of the pipeline.

4.5 RANGE RESOURCES

4.5.1 Alternative 1 – Proposed Action

The pipeline ROW crosses lands that are located within 16 grazing allotments. The primary impact to range resources will be the short-term loss of available forage from the installation of the pipeline. Successful reclamation of the pipeline ROW should replace this loss of forage, as seed mixtures prescribed following construction should reestablish an adequate amount of grasses and forbs within the first few years.

Increased construction traffic along the unimproved roads and two-tracks may increase the chance of vehicle/livestock collisions. However, this traffic increase will be temporary, occurring only during the installation of the pipeline. Additionally, the construction activities will be taking place outside of the calving/lambing seasons, which will lessen the chance of vehicle collisions with livestock.

Construction activities associated with the installation of the pipeline will increase the chance of damage to cattle guards, fences, and gates. Sinclair will be responsible for establishing procedures to ensure construction contractors immediately report damages to these facilities.

Dust from construction activities will occur, and will be highly dependent on weather conditions and the volume of vehicle traffic. If conditions encourage dust during construction, it could settle on vegetation resulting in lower use by livestock. Increased dust will be temporary and localized, and primarily occur during the construction period. However, some dust may persist until vegetation is successfully established (up to five years following reseeding).

Due to the large size of the allotments within the PPPA, and the anticipated short-term loss of herbaceous vegetation, the loss of AUMs resulting from installation of the pipeline was not calculated for the project.

4.5.2 No Action Alternative

Under the No Action Alternative, no impacts to range resources will occur from installation of the pipeline.

4.6 WILDLIFE AND FISHERIES

4.6.1 Alternative 1 – Proposed Action

The proposed development will disturb approximately 868.5 acres of general wildlife habitat during construction (approximately 3 to 4 months). Approximately 735.0 acres of long-term disturbance (greater than five years) will occur in vegetation communities dominated by shrubs (Wyoming big sagebrush, saltbush, vegetated dunes/silver sagebrush, and desert shrub communities). However, due to the linear extent of the project, this acreage represents an extremely small percentage of available wildlife habitats on a regional scale.

In addition to construction activities along the pipeline ROW, a total of four temporary work areas will be used outside the pipeline ROW to store pipe. The use of these temporary work areas was analyzed in terms of potential impacts to wildlife species. In addition, approximately 0.012 acres or 522.7 square feet will be permanently impacted by expanding 11 existing block valves by approximately 20 feet. These block valves are located across the 103 mile pipeline ROW.

The duration of impacts to wildlife habitats will depend, in part, on the success of mitigation and reclamation efforts. Additionally, another important factor is the time needed for natural succession to return revegetated areas to predisturbance conditions.

Species that are sensitive to indirect human disturbance (noise and visual disturbance) will be impacted most during the duration of construction. However, these impacts will be localized along the pipeline ROW.

General Wildlife

The direct project disturbance of wildlife habitat in the PPPA will slightly reduce habitat availability for a variety of common small mammals, birds, and their predators. Construction will result in some direct mortality to small mammals and the displacement of songbirds from construction activity along the pipeline ROW. In addition, a slight increase in mortality from increased vehicle use of existing roads in the PPPA is expected. Quantification of these losses is not possible; however, the impact is likely to be low with the greatest loss occurring during construction when up to 200 workers could be accessing the pipeline ROW. Due to the relatively high reproduction potential of these species, and the linear nature of the project, small mammal and songbird populations will likely rebound following reclamation.

Big Game

Impacts to big game species will primarily result from increased disturbance during construction. Construction activities associated with pipeline installation can reduce use of surrounding habitat by big game. The PPPA supports pronghorn throughout the year. Approximately 172.4 acres of pronghorn crucial winter/yearlong range will be disturbed under the Proposed Action. Activities associated with the construction will likely temporarily displace pronghorn. However, once construction is complete antelope will likely return to predisturbance activity patterns, while other animals may move to other areas outside the disturbance area. Reeve (1984) found that pronghorn acclimated to increased traffic volumes and machinery as long as the traffic and machines moved in a predictable manner.

Approximately 4.0 acres of mule deer crucial winter/yearlong range will be disturbed under the Proposed Action. Activities associated with construction of the project will temporarily displace mule deer, however, once construction is complete some of the mule deer will likely habituate and return to pre-disturbance activity patterns.

Approximately 1.0 acre of crucial winter/yearlong range, 22.0 acres of winter/yearlong range and 6.2 acres of spring/summer/fall range for elk will be disturbed under the Proposed Action (primarily near the Ferris Mountains). The PPPA lacks suitable habitat

to support any substantial number of elk and construction activities associated with the Proposed Action will likely have little impact on this species.

According to management directives in the RMP (RFO, CFO, and LFO), crucial big game winter ranges will be closed from November 15 to April 30; this closure will reduce disturbance to wintering big game (primarily antelope), which are the most abundant big game species within the PPPA.

Greater Sage-Grouse

Under the Proposed Action, 490.0 acres of Wyoming big sagebrush, the primary vegetation cover type, will be impacted during construction. Greater sage-grouse may also avoid areas associated with construction along the pipeline ROW, and may also be impacted by noise disturbance associated with human activity, traffic, and construction activity. Resource specific mitigation measures for greater sage-grouse identified in Chapter 2 will reduce the impacts to leks and nesting areas.

Raptors

The potential impacts of the Proposed Action on raptors are: (1) nest abandonment and/or reproductive failure caused by project related disturbance, and (2) small, temporary reductions in prey populations.

The greatest potential impact to raptors from project activities is human disturbance during the nesting season (February 1 to July 31) that might result in reproductive failure. To minimize this potential, disturbance will not be allowed during the critical nesting season near active raptor nests. Seasonal timing restrictions within a “buffer zone” around nests to avoid disturbance to nesting raptors should reduce impact from construction activities. The BLM will require the relocation of any planned above ground facilities if they fall within 1,200 feet of a ferruginous hawk nest and 825 feet of any other hawk species nest. Exceptions may be granted by the BLM if they determine the activity has no impact to nesting activities. Raptors nests not occupied during field surveys conducted in 2006 may be occupied in the future and surveys will be conducted prior to construction to determine the status of nests within the PPPA.

Fish

Impacts to fish species (primarily smaller minnows) or other warm water species will potentially result from construction related impacts at perennial stream crossings, which could increase sedimentation, turbidity, and streambank erosion. Currently, Sinclair is proposing to directionally bore all perennial streams within the PPPA. However, the directional bore process will not eliminate all potential impacts. In certain locations construction equipment will be transported by building a temporary crossing structure across the waterway and will result in damage to stream banks and riparian vegetation. In these cases, Sinclair will be required to return the banks to their original condition and reclaim disturbed areas with an appropriate seed mixture. Additional best management practices listed in Chapter 2 will be required in these areas to prevent erosion and sediment from reaching waterways.

4.6.1.1 Threatened, Endangered Species – Wildlife

Wildlife Species

According to USFWS guidelines, prairie dog colonies greater than 200 acres in size represent potential habitat for black-footed ferrets. However, the two colonies mapped in the PPPA were not part of a colony greater than 200 acres. Therefore, no black-footed ferret surveys were required.

Bald eagles use of the PPPA is likely incidental due to the small amount of open water and riparian habitat. The Proposed Action is not expected to impact bald eagles.

4.6.1.2 Sensitive Wildlife Species

Mammals

Six sensitive mammal species may potentially be found on or near the PPPA. These include: Wyoming pocket gopher, white-tailed prairie dog, swift fox, fringed myotis, long-eared myotis, and Townsend's big-eared bat. Of these species, only the white-tailed prairie dog will be impacted by the pipeline construction activities.

The BLM does attempt to move all surface disturbing activities outside of prairie dog towns, since prairie dogs are on the Wyoming BLM Sensitive Species List. However, white-tailed prairie dog colonies located within the PPPA will be disturbed given the current proposed construction easement for the project.

Birds

The following bird species were detected during field surveys conducted within the analysis area during the summer of 2006: ferruginous hawk, golden eagle, greater sage-grouse, loggerhead shrike, long-billed curlew, and western burrowing owl. Construction may temporarily displace these species from areas near the pipeline ROW.

Additional impacts to the remaining sensitive bird species known or suspected to occur within the PPPA will be small based on the linear nature of the project. However, construction activities may also temporarily displace these species. Seasonal restrictions on construction within a "buffer zone" around golden eagle and ferruginous hawk nests should reduce impacts to their nesting activities.

Potential mountain plover habitat does occur within the PPPA (see **Figure 3-5**). The exact location of mountain plover nests may change annually, however, mountain plovers usually return to the same general area year-to-year. For this reason, surveys for mountain plovers will be conducted within areas of potential habitat prior to construction. Impacts to mountain plovers will be avoided by not allowing construction activities in occupied nesting habitat from April 10 to July 10 if they are detected during surveys.

Amphibians and Reptiles

Occupied leopard frog habitat will be directionally bored to minimize impacts to this species. The bore rigs will be set up outside occupied habitat and construction equipment will be driven around these areas to avoid impacts to this sensitive species.

Fish Species

No sensitive fish species occur within the PPPA.

4.6.2 No Action Alternative

Under the No Action Alternative, no impacts to wildlife and fish resources will occur from installation of the pipeline.

4.7 WATER RESOURCES

4.7.1 Alternative 1 – Proposed Action

Water resources will be impacted during pipeline construction by removal of vegetation, soil compaction, and soil exposure to wind and water erosion. These direct impacts will potentially increase surface run-off, erosion, and contribute to sediment loading in PPPA waterways.

Approximately 60 percent of the soils being impacted along the pipeline ROW are susceptible to water and wind erosion. A total of 447.0 acres are considered highly erodible if exposed to water and 152.0 acres are considered prone to wind erosion. The primary concern with these soils is the release of sediment into waterways during large precipitation events, especially where the ROW crosses perennial waterways. Best management practices as described in Chapter 2 and the Terms and Conditions of the Grant will be used to capture run-off from bare soils during and after construction activities. These structural best management practices generally include physical processes such as silt fences and hay bales to temporarily control sediment. Silt fence is generally the best structural method to utilize around perennial waterways and will be installed around the perimeter of spoil piles associated with bored holes or open trenched areas to prevent the transport of sediment to receiving waters. Successful reclamation of the pipeline ROW will be required to prevent long-term soil related impacts from occurring to water resources.

The aspect and gradient of the ROW also creates erosion issues. This project has two areas, Sand Creek Canyon and Ryan Hill, which present challenges with regard to preventing erosion after construction. In these areas and other areas with steeper slopes, best management practices will be required to capture run-off and to create conditions that will allow reclamation to be successful. Silt fence shall not be placed in a location where the slope exceeds five percent. In addition, best management practices such as fiber rolls or appropriate measures such as erosion control blankets will be used in areas of steep slopes (greater than five percent) to reduce erosion, trap sediment, and reestablish vegetation.

The pipeline ROW crosses approximately nine perennial streams, 27 intermittent / ephemeral drainages, three artificial paths, and 11 canals/ditches in the North Platte River Basin and associated sub-watersheds. In addition, the pipeline ROW crosses 21 intermittent / ephemeral drainages in the Great Divide Closed Basin (see **Table 3-8** in Chapter 3 for an inventory of stream crossings within the PPPA). **Table 4-1** identifies stream features that will be directionally bored. Drainage features (excluding canals/ditches) not identified in **Table 4-1** will be open trenched to install the pipeline. Approximately 7 canals/ditches located within Natrona County will also be directionally bored. As identified in **Table 4-1**, all perennial streams and several intermittent stream crossings will be directionally bored to prevent impacts to channel morphology. The directional bores will average between 10 to 15 feet below the stream channel to minimize effect from potential scour. These bore sites will be set back from the stream bank at a sufficient distance to prevent impacts to wetlands occurring in connection with waterways. Many of these waterways are classified as waters of the U.S. (waterways occurring outside the Great Divide Basin) and will require a USACE Section 404 permit. This permitting process will require Sinclair to disclose all impacts to these waterways associated with installation of the pipeline.

Directional boring will eliminate some of the impacts, but it is anticipated that transporting construction equipment across waterways by building a temporary crossing structure in certain locations will result in damage to stream banks and vegetation. In these cases, Sinclair will be required to return the banks to their original condition and reclaim the vegetation with an appropriate seed mixture. Additional best management practices such as silt fence or hay bales will be required in these areas to prevent sediment from reaching waterways.

Hydrostatic Testing

Another water resource impact associated with pipeline installation is the use of hydrostatic test water to test the integrity of the new pipeline. Use and discharge of this water will need to be completed and disposed of in a manner that does not affect streams, soils, and surface water quality. Moreover, all waters shall be discharged in a manner to prevent erosion, scouring, or damage to stream banks, stream beds, ditches, or other waters of the State at the point of discharge. Sinclair will discharge all hydrostatic test water onto upland sites.

The discharge of hydrostatic test water will require a NPDES general permit for temporary discharge from the WDEQ/WQD. Before disposal, the water will be tested to ensure it meets all of the State of Wyoming quality standards outlined in the general permit for temporary discharge. Hydrostatic test water from the pipeline will be exposed to virgin material (the new 16-inch pipeline). However, this water will still require testing for the following parameters: Flow (gpm), Total Suspended Solids (mg/L), pH (s.u.), oil and grease, and Total Residual Chlorine (mg/L). The effluent limitation, frequency, and sample type for each parameter listed is detailed in the general permit for temporary discharge. Test procedures for the analysis of pollutants, collection of samples, sample containers, sample preservation, and holding times shall conform to regulations published pursuant to 40 CFR, Part 136. Sinclair shall notify the permitting authority of the

discharge by submitting a Notice of Termination. In addition, Sinclair shall provide telephone notification to WDEQ/WQD at least 24 hours prior to any testing discharge.

Table 4-1
Inventory of Perennial and Intermittent Streams
to be Directionally Bored within PPPA

Perennial and Intermittent Streams to be Directionally Bored from North (Casper) to South(Sinclair) along the Pipeline ROW
Poison Spider Creek - Perennial
Muncell Pond - south of Poison Spider Creek
Iron Creek - Intermittent
Poison Spring Creek - Spring fed/Intermittent
Willow Creek - Intermittent
Unnamed drainage north of Fish Creek (with northern leopard frog population)- Intermittent
Fish Creek - Perennial (1 of 2)
Fish Creek - Perennial (2 of 2)
Horse Creek - Perennial
Sweetwater River - Perennial Sweetwater Arm of Pathfinder Reservoir (currently not inundated) but flowing in a channel
Sand Creek - Perennial Three crossings within Sand Creek Canyon and two unnamed perennial tributaries to Sand Creek within the canyon will be bored
Turkey Creek (Sand Creek Canyon)- Perennial

4.7.1.1 Groundwater

In general, ground disturbance during construction (primarily trenching) is anticipated to be between 3 to 6 feet of the existing surface. As a result, impacts to deeper confined and unconfined aquifers will not occur as part of the Proposed Action. Potential impacts to groundwater will primarily occur in areas adjacent to streams that tend to have a seasonally high water table. Construction activities that impact shallow alluvial aquifers will most likely result in increased turbidity or slight fluctuations in groundwater levels. These impacts will be localized and short-term. No groundwater sources will be used in conjunction with the project.

4.7.2 No Action Alternative

Under this alternative, no new pipeline capacity will be installed in the ROW and no impacts to water resources or shallow ground water will occur.

4.8 VEGETATION, WETLANDS, AND INVASIVE WEEDS

4.8.1 Alternative 1 – Proposed Action

Construction of the pipeline will result in the loss of native vegetation in terms of cover and species composition. Direct impacts to existing native shrub/grassland communities in the PPPA resulting from project implementation include a short-term reduction of herbaceous vegetation and a long-term loss of shrub cover.

The Wyoming big sagebrush, saltbush, vegetated dune, desert shrub, and mixed-grass prairie will be the primary plant community types disturbed during construction. In general, the duration and effect on these vegetation communities will depend on adequate reclamation techniques and time required for natural succession to return disturbed areas to pre-disturbance conditions (for both herbaceous grass species and shrubs). In addition, the success of mitigation (seeding) will be influenced by climatic and soil conditions. Areas of steeper topography, high alkaline soils, or low moisture availability will create difficult conditions to adequately establish vegetation. Seed mixes composed of salt tolerant species will be used in areas with higher salt content. Due to the long recovery rates to reestablish shrub cover in dry, xeric sites, revegetation along the proposed pipeline ROW will primarily result in the establishment of herbaceous grass species. Herbaceous grasses will replace vegetation communities currently dominated by Wyoming big sagebrush, saltbush, and desert shrub until sufficient time has passed to reestablish shrub species.

The total acreage of vegetation impacts (both short- and long-term) within the PPPA are identified in **Table 4-2**. It should be noted that total disturbance associated with the Proposed Action will be approximately 1,012 acres. However, some disturbance will occur in areas that have been heavily disturbed by previous pipeline activities. In these areas, impacts to vegetation were not included in **Table 4-2**. In addition, approximately 0.012 acres or 522.7 square feet of vegetation will be permanently impacted by expanding 11 existing block valves by approximately 20 feet. These block valves are located across the 103 mile pipeline ROW.

Table 4-2
Vegetation Impacts

Vegetation Community	Impacted Acres	Type of Impact ¹
Mountain Big Sagebrush	490.0	Long-Term
Saltbush	101.2	Long-Term
Vegetated Dunes	56.3	Long-Term
Grassland Riparian	49.0	Short-Term
Irrigated Crops	43.5	Short-Term
Mixed-Grass Prairie	41.0	Short-Term
Greasewood	32.5	Long-Term
Desert Shrub	31.0	Long-Term
Mountain Big Sagebrush	24.0	Long-Term
Total	868.5	-

¹Short-term impacts normally occur during the construction phase of the project and may continue for a period of up to five years. Long-term impacts continue beyond five years after completion of the project.

Surface disturbance could affect vegetation directly and indirectly by removal of existing vegetation and by introducing weed species. Weedy species often thrive on disturbed sites and out-compete more desirable native plant species. The PPPA is known to be vulnerable to invasion of weed species. However, the current level of weed establishment is low. The potential for weeds to occur will increase with construction along the pipeline ROW. Utilizing proper BLM approved seeding mixtures will help mitigate the potential for weed invasion on disturbed sites. Additionally, monitoring of disturbed sites

will be required to identify any weed invasion. Additional measures to prevent the spread of weeds are discussed in Chapter 2.

4.8.1.1 Federally Listed and Sensitive Plant Species

Construction of the pipeline is not expected to directly affect federally listed plant species. One of the 11 BLM sensitive plant species (the many-stemmed spider-flower) has been documented within the PPPA and approximately 2.7 acres of occupied habitat will be disturbed during construction of the pipeline. Techniques to minimize impacts to the many-stemmed spider-flower are discussed in Chapter 2. Impacts from construction will have a small impact on the overall seedbank for the many-stemmed spider-flower because the Steamboat Lakes population is estimated at approximately 500,000 to 1,000,000 individuals spread across 200 acres (Fertig 2000).

The spread of weed species into areas occupied by sensitive plants is a concern. The current extent of weed establishment within Steamboat Lakes is extremely low (no weeds were observed in occupied spider-flower habitat). However, this area will be susceptible to weed establishment following disturbance. Appropriate measures to prevent the establishment of weed species within this area are discussed in Chapter 2. Additionally, onsite monitoring by a biologist during and after construction will also ensure mitigation techniques are being followed and will allow for early detection of any weed species within occupied habitat.

4.8.1.2 Wetlands

A total of 11.4 acres of wetlands have been delineated within the PPPA. The majority of wetlands will be directionally bored to avoid direct impacts. However, larger alkaline wetlands located within Steamboat Lakes and Arkansas Flats will likely be trenched. The directional bore process will eliminate some of the impacts to wetland resources, but it is anticipated that construction equipment will be transported across wetlands or waterways by building a temporary crossing structure or using mats in certain locations. This will result in damage to stream banks, riparian grassland vegetation, and wetlands. In these cases, Sinclair will be required to return the banks to their original condition and reclaim these areas with an appropriate wetland seed mixture.

Impacts to wetland resources or grassland riparian communities within the PPPA are considered short-term (less than five years) and with adequate moisture available due to seasonally saturated or inundated soils, vegetation should be established relatively quickly when compared to drier upland sites.

4.8.2 No Action Alternative

Under this alternative, no new pipeline capacity will be installed in the ROW and no impacts to vegetation or wetlands will occur.

4.9 SPECIAL MANAGEMENT AREAS – AREAS OF CRITICAL ENVIRONMENTAL CONCERN

4.9.1 Alternative 1 – Proposed Action

Approximately 5.5 miles of the pipeline ROW crosses a proposed ACEC for the federally endangered blowout penstemon. Approximately 50.2 acres within this proposed ACEC boundary will be disturbed during construction. Vegetation within this area is primarily composed of active and vegetated dunes. No impacts to the blowout penstemon are anticipated based on presence/absence surveys conducted in June 2006. In addition, dune habitat crossed by the pipeline within the proposed ACEC boundary is considered marginal for this species (see Section 3.9.7.1).

4.9.2 No Action Alternative

Under this alternative, no new pipeline capacity will be installed within the proposed ACEC boundary. This will ensure that no impacts will occur to active and vegetated dunes.

4.10 VISUAL RESOURCES

4.10.1 Alternative 1 – Proposed Action

Portions of the proposed ROW are clearly impacted from the previous installation of pipelines. In these areas, the pipeline ROW contrasts with the existing vegetation and topography in the PPPA. However, other portions of the ROW have varying degrees of vegetative cover that often blend with the vegetation adjacent to the ROW. In these areas, the existing ROW is not noticed by the casual observer.

The installation of the pipeline will result in the disturbance of 1,012 acres. This disturbance will result in creating a 103 mile pipeline ROW without vegetative cover. The result will be a pipeline ROW that will contrast with the existing landscape for several years. The number of years this contrast will be visible depends on the success of the reclamation effort. Initial reclamation efforts will use targeted seed mixes (See Applicant Committed Mitigation Measures in Chapter 2) that are compatible with vegetation communities mapped in the PPPA. If this effort is successful, the ROW contrast will most likely still be noticeable, but should blend some with the adjacent vegetation.

Above ground ancillary facilities associated with the project consist of block valves and line markers. Block valves located along the existing ROW are currently painted white, a color that contrasts with the existing vegetation. During the installation of the pipeline, an additional block valve will be added at each site and painted a color that blends with the existing landscape. The colors chosen will be shale green and/or brown, and dependent on the vegetation community present in an area. Only the new block valve will be painted this landscape friendly color. The other block valves present at the site will be painted at a later date.

Utility ROW in Class II areas are not expected to dominate the landscape by becoming the primary focus of and holding the viewers attention from roads. Proper reclamation of the pipeline ROW and painting block valves to blend with the existing topography should be sufficient mitigation to allow this project to meet VRM Class II requirements.

4.10.2 No Action Alternative

Under this alternative, no new pipeline capacity will be installed in the ROW. This will ensure that no visual impacts will occur.

4.11 RECREATION

4.11.1 Alternative 1 – Proposed Action

Short-term impacts to recreational use in localized areas of the PPPA will likely occur during construction activities. Hunters, photographers, and wildlife viewers will be displaced or will not want to use two-tracks and unimproved roads in the vicinity of the pipeline ROW during construction activities. This displacement will be localized, as the construction activities occur on segments of the ROW. Due to the remote location of the PPPA, visitation to the area is considered to be low, with the exception of the fall hunting season. It is during the hunting season that most of the conflict between the construction activities and recreational use will occur. Any displacement of hunting activity will be localized and based on where the construction activity is occurring.

After installation of the pipeline, no long-term impact to recreational use is expected in the PPPA. Successful reclamation of the pipeline ROW will return the vegetation conditions to those preferred by big game and other wildlife species.

4.11.2 No Action Alternative

Under this alternative, no new pipeline capacity will be installed in the ROW. The recreation experience will remain as it currently exists in the PPPA.

4.12 CULTURAL AND HISTORICAL RESOURCES

4.12.1 Alternative 1 – Proposed Action

A Class III cultural resource inventory has been conducted for the proposed pipeline ROW. The Class III inventory is an intensive field survey designed to locate and record all cultural resource sites within a specified area. The survey conducted for this project included a 150 foot area for the length of the proposed pipeline. As a result of this survey, 10 eligible sites were identified that will be impacted by the project. Specific mitigation measures have been developed to prevent significant impacts to these documented cultural resources in the PPPA. Significant impacts to cultural resources will occur if the pipeline construction activities resulted in adverse effects to properties listed or determined eligible for listing on the NRHP.

The Oregon Trail is located within and adjacent to the PPPA. As part of the historic assessment of the Oregon Trail within the PPPA, several crucial project elements were

discussed in relation to the viewshed analysis. Most importantly is the fact that the proposed pipeline will be placed in an area of previous disturbance, creating as little new disturbance as possible. The proposed pipeline is also a subsurface facility with all impacts at ground level or below, a fact that becomes important when viewing the close proximity of the trail to the pipeline ROW. Another important factor is the construction disturbance will be temporary; and recontouring and revegetation will ensure that no new impacts to the viewshed will occur.

Overall, the route of the Oregon Trail west of Casper, WY has been significantly impacted by various alignments of County Road 319 (the Oregon Trail Road), the existing Sinclair pipeline ROW, and years of agricultural, industrial, and residential development. In addition to these viewshed factors, the trail has been overlain by upgrades to the county road and partially impacted by the existing pipeline ROW for much of its length. These factors have led to the conclusion that the proposed project will create no significant visual intrusion to the viewshed of the Oregon Trail (Western Archeological Services, Inc. 2007).

4.12.1.1 Oregon Trail Mitigation

Four Oregon Trail mitigation areas were identified where the proposed project will physically impact the trail. These mitigation measures were developed through collaboration between SHPO, BLM, and Sinclair to avoid impacts in these areas. With development of these mitigation areas, no significant impacts are anticipated to the Oregon Trail. The four areas are discussed below along with the recommendations.

Mitigation Area 1

Mitigation Area 1 is located in Sections 31 and 32, T31N, R84W, and consists of a constricted area due to visible trail segments, county road, and risers. In this area, it is recommended that the proposed pipeline stay within previous disturbance by placing it between the two existing pipelines within the existing pipeline ROW, starting at the intersection of the existing power line and pipeline ROW, and extending east until the road crossing at the top of the hill. This area will be flagged prior to construction.

Mitigation Area 2

Mitigation Area 2 is located in Section 23, T31N, R84W, and consists of an area where the visible trail is half ruts and half old county road. In this area, it is recommended that the proposed pipeline construction stay within the previous disturbance. The spoil piles should be kept away from the northwest side of the pipeline ROW to avoid any soil sliding down the hill onto the trail. No surface blading should occur along the proposed pipeline for 100 feet on either side of the trail crossing. This area will be flagged prior to construction.

Mitigation Area 3

Mitigation Area 3 is located in Sections 2, 3, 9, and 10, T31N, R83W, and consists of an area where the county road, existing pipeline ROW, power line, fence, and trail all come together. In this area, it is recommended that Sinclair use the alternate route staked in the

field on the northwest side of the county road, paralleling the existing Frontier pipeline ROW. This reroute off the existing ROW will avoid any physical impacts to the trail.

Mitigation Area 4

Mitigation Area 4 is located in Section 29, T29N, R82W, and consists of a very tight area due to the visible trail, county road, powerline, cathodic box, and existing pipeline ROW. In this area, it is recommended that the proposed pipeline be placed between the existing pipelines and stay within the existing disturbance. This area will be flagged prior to construction.

4.12.1.2 Prehistoric Site Mitigation

Four prehistoric sites were identified where the proposed project could potentially impact the sites. These mitigation measures were developed through collaboration between SHPO, BLM, and Sinclair to avoid impacts to these areas. With development of these mitigation measures, no significant impacts are anticipated to these sites. The four areas are discussed below along with the recommendations.

Site 48CR8708

It is recommended that all construction activity (blading, trenching, and reclamation) through the site be monitored for 500 feet on either side of the site boundaries. It is also recommended that a fence be erected on the western edge of the two-track road through the site to avoid inadvertent impacts to the undisturbed area.

Site 48CR310

It is recommended that all construction be confined to the existing previous disturbance. Because of the high probability for the discovery of buried materials within the previously disturbed pipeline ROW, it is recommended that a construction monitor and open trench inspection be conducted at the site. The construction monitoring should be carried out on all activities for 500 feet on either side of the site boundaries. It is also recommended that fences be erected on the north and south sides of the existing pipeline ROW for the length of the site, to avoid inadvertent impacts during construction.

Site 48CR329

It is recommended that a fence be erected along the eastern edge of the disturbed pipeline ROW to avoid inadvertent impacts to the site. The fence should be no less than 800 feet in length, from the southern site boundary 800 feet north, including the large sand dune at the northern edge of the site.

Site 48CR332

It is recommended that the area be bored to avoid further impacts to buried cultural horizons. Bore setup must be a sufficient distance from the site boundaries to avoid impacts. It is also recommended that a construction monitor be present for all activities conducted around the site. An open trench inspection should also be conducted at this site.

4.12.1.3 Other Mitigation Measures

Construction related impacts could occur to cultural resources that are buried and were not documented during the Class III survey. These sites are not identified during the survey because no surface expression is visible. To prevent impacts to the sites during construction, the BLM has stipulated that a cultural resource specialist conduct an open trench inspection to prevent damage to these cultural resources.

4.12.2 No Action Alternative

Under this alternative, the 16-inch pipeline will not be installed and no impacts will occur to existing cultural resources in the PPPA.

4.13 SOCIOECONOMICS

4.13.1 Alternative 1 – Proposed Action

Socioeconomic impacts resulting from the Proposed Action will be small to non-existent. The pipeline is being installed to increase the amount of oil reaching the Sinclair Refinery and support the current upgrades at the refinery. The increase in refinery output could help the regional economy, as more gasoline will be available for the consumers in the Western United States. This could help reduce regional gasoline shortages and ensure prices are kept lower. Overall, this project will boost refinery output for the Rocky Mountain Region.

Construction activity may give a short-term boost to the local economy during the installation of the pipeline. It is not known if the contractors hired will be from WY, but the presence of up to 200 pipeline construction workers will result in increased economic activity for communities along the pipeline ROW.

The installation of the pipeline will not result in a population boost for Carbon and Natrona Counties, as the construction activity will be relatively short in duration, and will be completed within several months. After construction is complete, the need for additional workers is eliminated and the pipeline will be maintained by Sinclair staff currently located in the Carbon and Natrona Counties.

4.13.2 No Action Alternative

Under this alternative, no pipeline installation will occur and the Sinclair Refinery will not have the volume of crude oil needed to support the refinery upgrade.

4.14 TRANSPORTATION AND ACCESS

4.14.1 Alternative 1 – Proposed Action

The Proposed Action will result in small increases in the volume of traffic on federal and state highways that provide access to the PPPA. However, increases in vehicle use will occur on unimproved roads and two-tracks used for delivering construction workers and equipment to the pipeline ROW. The increased vehicle use will not cause issues with visitors to the PPPA because it will be localized and only noticed where construction

activity is occurring. Overall, no issues with regards to traffic and vehicle use will occur as a result of the project.

No new roads will be constructed as a result of the Proposed Action. Construction access will occur along the existing unimproved roads and two-track. Therefore, no fiscal impacts resulting from the development or maintenance of roads will occur.

4.14.2 No Action Alternative

Under the No Action Alternative, no increase in vehicle use will occur on unimproved roads and two-tracks located in the PPPA.

4.15. HAZARDOUS MATERIALS

4.15.1 Alternative 1 – Proposed Action

All project related activities involving hazardous materials will be conducted in a manner that minimizes potential environmental impacts. Potential impacts associated with hazardous materials include human contact, inhalation and ingestion, and the effects of exposure, spills, or accidental fires on soils, surface and groundwater resources, vegetation, and wildlife.

The risk of human contact will be predominantly limited to the operator and construction contractors. Strict adherence to the SPCC Plan and the mitigation measures outlined in Chapter 2 will reduce the risk of human contact, spills and accidental fires, and provide protocol and employee training to deal with these events should they occur. Based on the successful implementation of these plans and procedures, no impacts associated with hazardous materials will be anticipated. Any spills of oil, gas, or any potential hazardous substance will be reported immediately to the BLM, State of Wyoming, landowner, local authorities, and other responsible parties. Additionally, spills will be mitigated immediately, as appropriate, through cleanup or removal to an approved disposal site.

4.15.2 No Action Alternative

Under this alternative, no hazardous material issues associated with the installation of a new 16-inch pipeline will occur along the existing pipeline ROW.

4.16 HEALTH AND SAFETY

4.16.1 Alternative 1 – Proposed Action

The Proposed Action will create a slightly higher level of risk to workers and visitors in the PPPA. Increased traffic on the unimproved roads and two-tracks will raise the potential for accidents between construction workers, ranchers, and visitors. Construction work in a remote location carries risk and will require Sinclair and their contractors to be concerned with adhering to safety considerations. Measures such as carrying fire suppression equipment and informing construction workers to properly extinguish cigarettes will help prevent fires. Additionally, during the hunting season most hunters will seek areas away from the construction activity.

4.16.2 No Action Alternative

Under the No Action Alternative, no construction activities will occur along the ROW and create potential health and safety issues.

4.17 NOISE

4.17.1 Alternative 1 – Proposed Action

Some small increases in noise will be associated with construction activities along the pipeline ROW. These increases will be for a short period of time and isolated, occurring primarily in construction and staging areas. Within the pipeline ROW, which is primarily located in a remote location, noise impacts will be considered non-existent. No noise issues will occur after the construction is completed along the ROW.

4.17.2 No Action Alternative

Under this alternative, no noise impacts will occur from installation of the pipeline.

4.18 CUMULATIVE IMPACTS

This section describes cumulative impacts related to the Proposed Action under consideration in this EA. The Council on Environmental Quality (CEQ) regulations for implementing NEPA defines cumulative impacts as:

“The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions and regardless of what agency (federal and non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

The CEQ guidance limits cumulative impact analysis to “important issues of national, regional, or local significance” (CEQ 1997). Therefore, this chapter only addresses resources that contribute to cumulative impacts in an area of influence (AOI). Depending on the resource, the AOI could be the PPPA or it could have a larger area of influence (such as Carbon or Natrona Counties).

The following resources addressed in the EA were determined not to result in or contribute to substantial cumulative impacts:

- Air Quality
- Geology/Minerals/Paleontology
- Cultural Resources
- Health and Safety
- Noise
- Range Resources
- Hazardous Waste
- Soils

- Transportation
- Water Resources

4.18.1 Actions Considered in Cumulative Impact Analysis

General categories of actions and projects that may contribute to significant cumulative impacts in the PPPA include energy production (natural gas and oil), grazing, agricultural activities (including irrigation), and utility development. **Table 4-3** identifies the past, present, and reasonably foreseeable future actions that will potentially contribute to cumulative impacts and have been considered in this analysis.

Table 4-3
Past, Present, and Reasonably Foreseeable Future Actions

Land Use	Status of Action
Energy Production	Past, Present, and Reasonably Foreseeable
Grazing	Past, Present, and Reasonably Foreseeable
Agricultural Activities	Past, Present, and Reasonably Foreseeable
Utility Development	Past, Present, and Reasonably Foreseeable

4.18.1.1 Cumulative Impacts

Vegetation

The AOI for vegetation is the PPPA.

The Proposed Action will add to the cumulative removal of vegetation communities in the PPPA. Due to the abundance of Wyoming big sagebrush cover types in the PPPA and throughout central WY, the loss this cover type during the installation of the Sinclair pipeline will not result in the long-term decline of this vegetation community in the region. Most of the shrub component in the proposed ROW has been disturbed to varying degrees from previous pipeline installation and ongoing maintenance activities along the ROW. Additional disturbance to this vegetative community has occurred from ongoing grazing activities along the ROW.

Disturbance to vegetated sand dunes present in the ROW will total approximately 56 acres. This sensitive vegetation community is composed of silver sagebrush, as well as grasses and forbs unique to this soil type. The loss of this shrub component within a specialized plant community will take as long as 30 to 50 years to recover from the Proposed Action. This disturbance will be localized and confined to the proposed construction footprint, as additional actions are limited in this habitat type in the PPPA. However, if other utility ROWs were constructed through this sensitive vegetative community, it could cumulatively damage the vegetation and create difficult reclamation conditions.

The establishment of weed species is a potential cumulative impact in the PPPA. Construction activities carry the threat of introducing weeds to sites that have been cleared of all native and desirable vegetation. The current population of weeds is low in the PPPA, but ongoing activities along the southern portion of the ROW have allowed the

colonization of halogeton. Construction activities associated with the installation of the pipeline will improve the conditions for establishment of weed species in the PPPA. Monitoring and treatment of weeds will be required to prevent their establishment in the PPPA.

Wildlife (Including Special Status Species)

The AOI for wildlife is the PPPA.

Construction activity associated with installation of the pipeline will cause some dispersal of wildlife that is currently using the ROW and adjacent habitat. This construction activity will be short-term, lasting only for several months, and will not be considered as a contributor to cumulative impacts to wildlife in the PPPA. After construction is complete, the use of two-tracks and unimproved roads adjacent to the ROW will return to normal.

Loss of the Wyoming big sagebrush along the ROW will be minimal, as it is a long pipeline ROW, but narrow in relation to the existing vegetative communities. Therefore, this project will not fragment large acreages of shrub based vegetative communities and cause a sharp drop in the availability of this wildlife habitat in the PPPA. However, if other large utility ROWs were planned in and near this ROW, fragmentation and loss of important shrub based habitat will cumulatively impact wildlife such as greater sage-grouse, big game, and other sagebrush obligates.

No cumulative impacts to special status species are anticipated to result from the Proposed Action.

5.0 CONSULTATION AND COORDINATION

5.1 CONSULTATION AND COORDINATION

An environmental analysis is prepared when a federal government agency considers approving an action within its jurisdiction that may impact the human environment. An environmental analysis aids federal decision makers by presenting information on the physical, biological, and social environment of a proposed project and its alternatives. The first step in conducting an environmental analysis that meets the requirements of NEPA is to determine the scope of the project, the range of action alternatives, and the impacts to be included in the document.

The CEQ regulations (40 CFR, Parts 1500-1508) require an early scoping process to determine the issues related to the Proposed Action and alternatives that the analysis should address. The purpose of the scoping process is to identify important issues, concerns, and potential impacts that require analysis. The results of the scoping process are used to focus the analysis on the issues and concerns identified for the proposed project, so that alternatives or mitigation considered can be responsive to the issues and concerns. Alternatives that are not technically or economically feasible or responsive to the issues and concerns are not considered further in the analysis.

The Pathfinder Pipeline Project Environmental Assessment was prepared by a third-party contractor working under the direction of and in cooperation with the lead agency for the project, BLM RFO in Rawlins, WY, CFO in Casper, WY, and the LFO in Lander, WY.

5.2 PUBLIC PARTICIPATION

A formal public scoping notice was not prepared for the proposed Pathfinder Pipeline project because the project is proposing to amend an existing easement that is currently occupied by an 8-inch and 10-inch pipeline. This decision was made early in the process during internal scoping. However, the following organizations/individuals were provided the opportunity to comment or were consulted during preparation of the EA.

Federal Offices

U.S. Fish and Wildlife Service- Ecological Services
U.S. Fish and Wildlife Service - Pathfinder National Wildlife Refuge
U.S. Bureau of Reclamation

State Agencies

Wyoming Department of Game and Fish

Wyoming State Historic Preservation Office

Oregon Trail Mitigation Coordination

The Oregon Trail mitigation identified in this EA was developed through collaboration between the BLM and WY SHPO. These mitigation sites were identified during field reviews as the best routes to avoid direct impacts to the Oregon Trail resulting from construction activities.

Native American Tribes – Native American Sacred Site Consultation

As part of the general scoping process and the requirement to consult with Native Americans, letters were sent to the following tribes listed below so that the tribes could provide input on sacred sites that might be located within the PPPA. As a result of these letters, the BLM has received no comments to date.

- Blackfeet Nation
- Cheyenne River Sioux Tribe
- Comanche Tribe of Oklahoma
- Crow Tribe
- Eastern Shoshone Tribe
- Confederated Salish & Kootenai
- Kiowa Tribe of Oklahoma
- Lower Brule Sioux Tribe
- Nez Perce Tribe
- Northern Arapaho Tribe
- Northern Cheyenne Tribe
- Oglala Lakota Nation
- Rosebud Sioux Tribe
- Shoshone-Bannock Tribes
- Ute Tribe

The following organizations/individuals will be provided a copy of the Pathfinder Pipeline Project EA or will receive notification of the availability of the Pathfinder Pipeline Project EA at the beginning of the 30 day public comment period:

Federal Offices

- Bureau of Indian Affairs
- Federal Energy Regulatory Commission
- Federal Highway Administration
- Minerals and Management Service (Department of Interior)
- National Park Service

- National Science & Technology Center
- Natural Resources Conservation Service
- Office of Environmental Policy and Compliance (Department of Interior)
- Office of Surface Mining Reclamation and Enforcement (Department of Interior)
- U.S. Army Corps of Engineers
- U.S. Bureau of Land Management, Wyoming State Office
- U.S. Bureau of Reclamation
- U.S. Department of Agriculture
- U.S. Department of the Interior
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S. Geological Survey
- U.S. Representative Barbara Cubin
- U.S. Senator Craig Thomas
- U.S. Senator Mike Enzi

State Agencies

- Governor's Planning Office
- Office of the Governor- Environmental Policy Division
- State Representatives
- State Senators
- Wyoming Department of Agriculture
- Wyoming Department of Employment
- Wyoming Department of Environmental Quality
- Wyoming Department of Game and Fish
- Wyoming Department of Revenue, Ad Volorem Tax
- Wyoming Department of Transportation
- Wyoming State Engineer's Office
- Wyoming State Geological Survey
- Wyoming State Grazing Board
- Wyoming State Historic Preservation Office
- Wyoming State Forestry
- Wyoming State Office of State Lands and Investment
- Wyoming State Parks and Cultural Resources (Historic Sites Division)
- Wyoming State Planning Coordinator
- Wyoming State Trails Program

- Wyoming Oil and Gas Conservation Commission

County Government

- Carbon County Chamber of Commerce
- Carbon County Commissioners
- Carbon County Cooperative Extension Service
- Carbon County Council of Governments
- Carbon County Planning Commission
- Carbon County Public Library
- Carbon County Road and Bridge Department
- Carbon County School District #1
- Natrona County Commissioners
- Natrona County Development
- Natrona County Road, Bridge, and Parks
- Natrona County School District

Municipalities

- City of Casper
- City of Rawlins
- Pioneer Water & Sewer District
- Town of Sinclair
- Wyoming Association of Municipalities

Native American Tribes

- Blackfeet Tribal Business Council
- Cheyenne River Sioux Tribal Council
- Comanche Tribal Business Council
- Crow Tribal Council
- Kiowa Tribe of Oklahoma
- Lower Brule Sioux Tribe
- Nez Perce Tribe
- Northern Arapaho Business Council
- Northern Arapaho Council of Elders
- Northern Cheyenne Tribal Council
- Oglala Sioux Tribal Council
- Rosebud Sioux Tribe
- Salish & Kootanai Tribal Council

- Shoshone-Bannock Tribes
- Shoshone Business Council
- Shoshone Cultural Office
- Ute Tribal Council

Lease and ROW Holders

- Gocom Communications
- Kinder Morgan Operating LP
- PacificCorp
- Qwest Corporation

Local Media

- Casper Star-Tribune
- KCWY-TV
- KRAL/KIQZ
- KTWO-TV & KTWO Radio
- Lander Journal
- Laramie Daily Boomerang
- Rawlins Daily Times
- Western Radio Communications
- Wyoming State Tribune-Eagle
- Wyomedia KFNB-TV

Landowners/Grazing Permittees

- Ben Annis
- Oscar T. & Annis Family Trust
- Yvonne Marie Baures, Trustee
- John Frank Bentley
- Jerry Cook
- Ralph Costello
- Kathleen Lynn Curtis
- F. Mark Eiserman
- Harvey Gloe
- Duane A. Hippe
- Earline Hittel
- Jane L. Johnson
- Phillip B. Johnson, Suc. Trustee

- Martha Kirkland, Co-Trustees
- Elgin Kvernum
- Gerry Minick
- William B. Molinaire, Jr.
- Kenneth L. McFarland
- Lawrence E. Middaugh, et al.
- Patrick W. Munsell
- Pathfinder Ranch, Inc.
- Peterson Livestock, LLC
- 760 Ranch, LLC
- Rattlesnake Grazing Association, Inc.
- Rim Rock Livestock Company
- Kevin Schultes
- E.H. Shipley
- Mark Wallace
- Kenneth L. Waters
- YZ Limited Partnership
- Roger L. Ziel

Other Agencies, Industry Representatives, Individuals, and Organizations

- Alliance for Historic Wyoming
- Amber Travsky
- American Lands Alliance
- American Sportfishing Association
- Biodiversity Conservation Alliance
- Bjork, Lindley, & Little, PC
- Bowhunting Preservation Alliance
- Carbon County Coalition
- Carbon County Stockgrowers
- Center for Native Ecosystems
- Congressional Sportmen's Foundation
- Defenders of Wildlife
- DLG Properties
- DRU Consulting, LLC
- Earthjustice Legal Defense Fund, Inc.
- Energy Analysts
- Environmental Defense

- Field Museum of Natural History (Department of Geology)
- Foundation for North American Wild Sheep
- Grassroots Advocate
- Grouse, Inc.
- Hayden Wing & Associates
- International Association of Fish and Wildlife Agencies
- Izaak Walton League
- Land and Water Fund of the Rockies
- Mormon Trails Association
- Motorized Recreation Council of Wyoming
- National Shooting Sports Foundation
- National Wildlife Federation
- Natural Resources Defense Council
- North American Pronghorn Foundation
- Oil & Gas Accountability Project
- Oregon-California Trails Association
- Petroleum Association of Wyoming
- Platte River Power Authority
- Public Lands Advocacy
- Public Lands Foundation
- Rawlins Chamber of Commerce
- Rawlins Downtown Development Authority
- Rocky Mountain Elk Foundation
- 3-Shot Sage Grouse Foundation
- Saratoga-Encampment-Rawlins Conservation District
- Sierra Club
- Southwest Wyoming Industrial Association
- Theodore Roosevelt Conservation Partnership
- The Fund for Animals
- The Wilderness Society
- Trout Unlimited
- University of Wyoming
- University of Wyoming Libraries
- Western Ecosystems
- Western Land Exchange Project
- Western Watershed Project

- Wildland Center for Preventing Roads
- Wildlife Habitat Council
- Wildlife Management Institute
- Wyoming Advocates for Animals
- Wyoming Association of Professional Archaeologists
- Wyoming Association of Professional Historians
- Wyoming Board of Outfitters & Professional Guides
- Wyoming Business Council
- Wyoming Business Alliance
- Wyoming Conservation Alliance
- Wyoming Heritage Foundation
- Wyoming Natural Diversity Database
- Wyoming Livestock Board
- Wyoming Livestock Roundup
- Wyoming Outdoor Council
- Wyoming Outfitters Guide Association
- Wyoming People for the USA
- Wyoming Pipeline Authority
- Wyoming Public Service Commission
- Wyoming Recreation Commission
- Wyoming Sportman's Association
- Wyoming Stockgrowers Association
- Wyoming Water Development Commission
- Wyoming Wilderness Association
- Wyoming Wildlife Federation
- Wyoming Woolgrower's Association

5.3 LIST OF PREPARERS

The following tables identify the core BLM Interdisciplinary Team (IDT) (**Table 5-1**) and the Principal IDT (**Table 5-2**) who were principally involved in preparing this EA.

Table 5-1
BLM Interdisciplinary Team

Name	Field Office	Responsibility
Chuck Valentine	RFO	Team Lead/ Realty Specialist
Randy Sorenson	CFO	Realty Specialist
David Simons	RFO	Environmental Planner/ NEPA Coordinator
Heath Cline	RFO	Wildlife Biologist
Patrick Walker	RFO	Archaeologist
Chris Arthur	CFO	Archaeologist
Robert Lange	RFO	Hydrologist
Susan Foley	RFO	Soil Scientist

Table 5-2
Principal Interdisciplinary Team

Name	Affiliation	Responsibility
Robert Belford	Parametrix Consulting	Interdisciplinary Team Leader / Project Manager
Francesca Liccione	Parametrix Consulting	Assistant Team Lead/ Environmental Scientist
Angelina Wainhouse	Parametrix Consulting	Senior GIS Analyst
Chad Jacobson	Parametrix Consulting	GIS Technician
Suzanne Fischer	Parametrix Consulting	Technical Editor/ Document Preparation
Jana Pastor	Western Archaeological Services	Cultural Resources
Susan Murray	Western Archaeological Services	Cultural Resources
Sara L. Davis	Western Archaeological Services	Cultural Resources

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